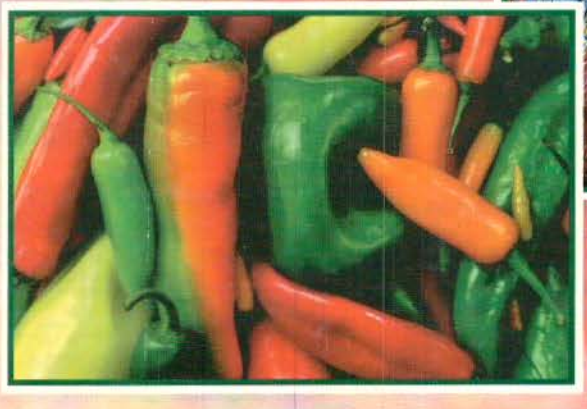
RISC user

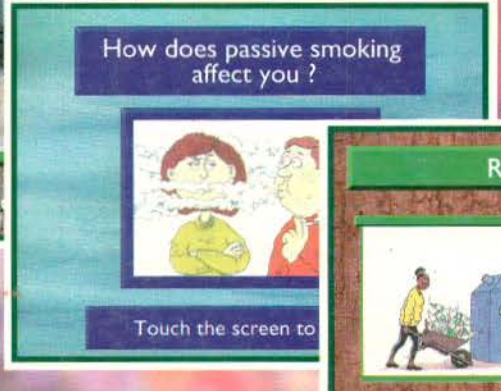
JULY 1994
Volume 7 Issue 8
Price £2.10

The magazine for users of Acorn RISC computers

Photodesk



What's Cooking at the Science Museum



ProArtisan Review

In Business with Acorn

JULY 1994

RISC user

THE MAGAZINE FOR USERS OF ACORN

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STAFFING

As Mike Williams mentioned in the last editorial, he has vacated the co-editor's chair. For this issue I have been drafted in to fill the gap, but from the next issue onwards the day-to-day responsibility for RISC User will rest in the capable hands of Alan Wrigley - though I will continue to assist from the wings.

THE MAGAZINE

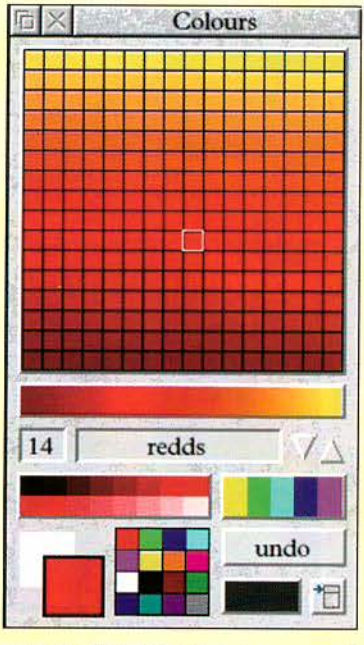
Supplies of the Risc PC are beginning to flow, and in parallel with this we are continuing our coverage of this exciting and very reasonably priced machine. This includes an evaluation of the two monitor options, and a look at the special colour picker which provides access to the machine's wonderfully rich palette. We also have reviews of the first two 24-bit art packages, though much of what is described here will be of relevance to Archimedes as well as Risc PC users. Both Photodesk and ProArt CD work happily in 256-colour modes.

We also hope that our new business column will be of interest to you. Here we shall be looking at the way in which the Arc (and Risc PC) can assist the small business, whether for correspondence, accounting or whatever, or anyone using an Acorn in a professional capacity. If you have comments about this new column, or indeed contributions, then please drop us a line.

STOP PRESS

We have just received a working prototype ARM 700 processor board. The ARM 700 is the successor to ARM Ltd's ARM 600 series of processors, as used in the Risc PC. See our tests on page 49.

Lee Calcraft



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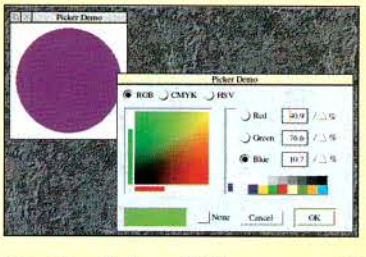

Using the Colour Picker page 28

Design your own bike and race it
Bicycles, like cars, take many different shapes...
Some are fast
others are better over rough terrain
The frame, wheels and handlebars and other parts are different for different types of bike
Touch the screen to continue

What's Cooking at the Science Museum page 36

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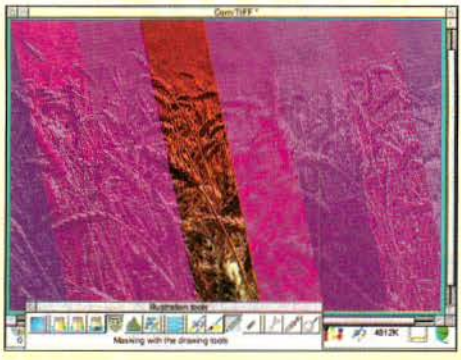

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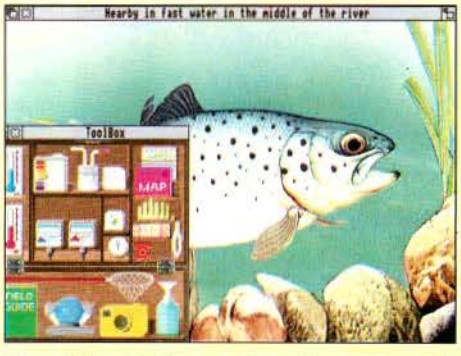
ImageFS page20

Artworks CD-ROMs page 32



Education: Software Round-up page 39

News ...

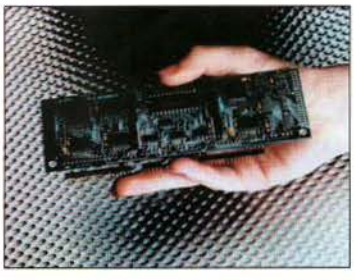
LOW COST COLOUR SCANNING

Integrex has recently launched the CS300, a fixed head colour scanner that can scan up to A4 size in either mono, grey scale or full 24-bit colour at a resolution of 300dpi. The CS300 is a single-pass sheet-fed scanner that operates at a speed of up to 34mm per second. The CS300 costs £399 ex. VAT, and the price includes Twain drivers, application software and a SCSI cable. Further details can be obtained from Integrex, Church Gresley, Swadlincote, Derbyshire DE11 9PT, tel. 0283 550880, fax 0283 550325.

AFFORDABLE QUALITY COLOUR PRINTING

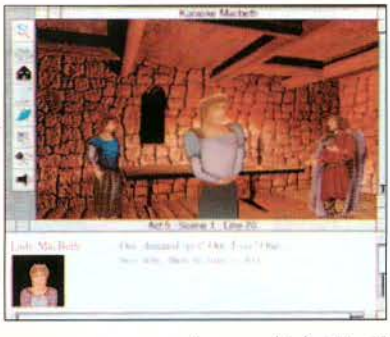
Also new from Integrex is the Colourjet 600, a compact inkjet printer offering resolutions up to 300 by 600 dpi. The Colourjet 600 is HP DeskJet 500 compatible, and printer drivers are available for all Acorn computers. The printer costs £259 ex. VAT and can be obtained from Integrex.

FERMANAGH BIRDS TAKE TO THE SKIES



Cumana is currently celebrating the sale of 412 Expandable Multi Use (EMU) boards, featuring user ports, hard drive interfaces and 60Mb hard drives, to Northern Ireland's Western Education and Library Board. The boards are being supplied to 202 primary schools located in Farmanagh, County Tyrone and County Londonderry. Cumana's EMU interface with user port, IDE upgrade and 60Mb hard drive is priced for education at £299.99 ex. VAT. Telephone Cumana on 0483 503121, fax 0483 451371, or contact them at Pines Trading Estate, Broad Street, Guildford, Surrey GU3 3BH.

CD-ROM BRINGS SHAKESPEARE TO LIFE

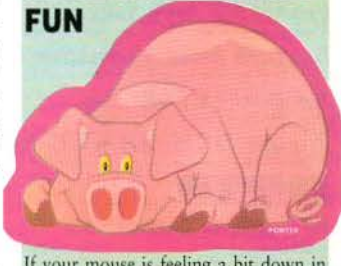


Cumana has just released a CD-ROM with a difference - Karaoke Macbeth. The package has been designed to make understanding Shakespeare simple and fun, and is a valuable learning tool for schools, amateur dramatics groups and anyone else wishing to study the bard. The play has been recorded for the CD-ROM by professional actors and actresses, complete with lifelike sound effects. When running the program, players may take any part they wish, either using 'karaoke mode' with the lines displayed on screen, or with the lines hidden to aid learning. Karaoke Macbeth costs £49.94 ex. VAT, and Karaoke Midsummer Night's Dream, Romeo and Juliet, Twelfth Night and Hamlet are currently under development. For further information contact Cumana on 0483 503121.

A WORLD OF INFORMATION

An exciting new release from ESM is the CD-ROM version of the Kingfisher Children's Encyclopedia. Sporting over 1,300 entries and 1,600 colour pictures, the Micropedia, as it is known, is claimed to be a comprehensive reference resource that will give pupils at Key Stages 1, 2 and 3 valuable experience in handling information on the computer. Supplied with a Quick Start Guide for teachers, photocopiable teaching activities for pupils and a detailed Reference Guide, the Kingfisher Children's Micropedia is available for £90.00 ex. VAT. A PC version is also available. Contact ESM, Duke Street, Wisbech, Cambs. PE13 2AE, tel. 0945 63441.

MAKE MOUSEWORK FUN



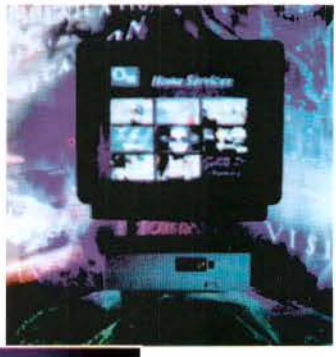
If your mouse is feeling a bit down in the dumps, why not brighten up its life a bit with these wacky new mousemats from Oxfordshire-based The Data Business. Kildare Burrowes from the company says, "Let's get a bit of colour and fun onto these functional products which we have to use every day of the week." Priced at £6.99 ex. VAT, the Mat Label-badged mousemats are top quality mats with hard etched PVC tops for good traction. They can be obtained from The Data Business, 3 Bankside, Kidlington, Oxford OX5 1JE, tel. 0865 842224, fax 0865 841507.

ACORN JOINS THE INFORMATION SUPERHIGHWAY

IN THE FUTURE, when every home, every business and every school is linked together by high-performance networks, people may look back on the 6th July 1994 as the day on which the Acorn Computer Group took the biggest and boldest step forward in its turbulent history. For on this date, at a press conference at Le Meridien Hotel, Piccadilly, London, the Acorn Computer Group announced its entry into the global interactive multimedia market with the launch of Online Media, a sister company to Acorn Computers Ltd.

Sit back and imagine being able to watch anything on television that you wanted, when you wanted, be it a personalised news service, the previous week's Coronation Street, or a film of your choice, without having to go anywhere near a video store. While you're watching it, the telephone rings. The programme is automatically paused as you answer the call and the paused image dissolves to be replaced by the features of your father - the TV has become a videophone. He tells you that he's just seen the car you've been looking for at your local second-hand car dealer and gives you its details. Seconds later, from the comfort of your armchair, you press a Menu button on the remote control and select the 'Car Dealer' page from a range of options that appear on the TV screen, including Entertainment, Education, Shopping, Banking and Communications. Photographs of various cars appear on screen. Still using the remote control, you select the car you're interested in. The salesperson appears on the TV beside the car and guides you around it, showing you the state of its bodywork, engine and interior. He then switches it on and takes it out for a drive so that you can see it in action and listen to its engine noise. You decide that you are definitely interested in it, and, by simply selecting the 'I'm interested' option beneath the car's photograph, ask the salesman to bring it over to your house so that you can test drive it yourself. Business over, you press the Continue button on the remote control and the programme you were watching continues from where you left it.

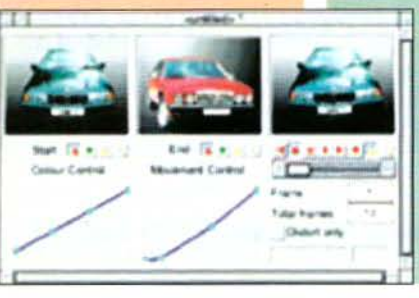
Science fiction? No, this is reality! Later this year Online Media, with partners the likes of Olivetti, ARM Ltd, Advanced Telecommunications Modules Ltd, Bell-Northern Research, News International, MAI, Anglia Television, Oracle and Cambridge Cable, will begin the first consumer trials of the Online Media Set-Top Box. This ARM-powered unit, which will sit on top of your TV and be connected to a national communications network, will provide access to services such as the one described above - video-on-demand, on-line-shopping, the possibilities are infinite.



Next month we'll be examining Online Media in detail, looking at its aims, products, services and implications for Acorn users, and the profound effect interactive multimedia is going to have on all our lives.

A REPHORMED CHARACTER

Rephorm, Oak Solutions' morphing application, has been updated with several new features. It now supports OLE (object linking and embedding) for Sprite editing, start and end frames can be swapped so that multiple sequences can be smoothly joined, and a Splitter application is included to enable large Sprite files to be edited on systems with limited memory. Rephorm costs £50 ex. VAT, and upgrades are also available. For more information contact Oak Solutions on 0532 326992, fax 0532 326993, at Dial House, 12 Chapel Street, Halton, Leeds LS15 7RN.

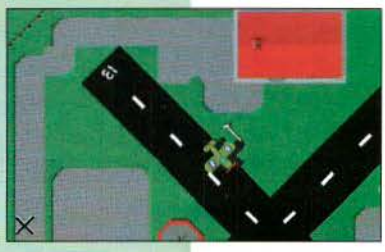


THE NAME'S WHO, DR WHO

The Fourth Dimension is about to release the sequel to its very popular adventure game Haunted House. Supplied on five discs, The Time Machine is a challenging graphical adventure which involves you and your Tardis (the Portaloo) travelling through time and space in a quest for... you'll have to find out yourself! The Time Machine costs £22.09 ex. VAT. The Fourth Dimension can be contacted at 1 Percy Street, Sheffield S3 8AU, tel. 0742 700661.

D-DAY FOR LONGMAN LOGOTRON

There has been much in the press recently about the 50th anniversary of the D-Day landings. Teachers looking for resources to help teach about this landmark in British history need look no further. Longman Logotron has just published two new titles aimed at helping 9-13 year olds understand a little more about our past. Both programs have been designed to complement the BBC's Landmarks series, 'Britain since the 1930s', to be broadcast in the Autumn. According to Longman, Landmarks Microworld Invasion and Landmarks PinPoint Datafile - Britain since the 1930s encourage pupils to see links between their own lives and surroundings and those of people in past times and different places. Landmarks Microworld Invasion is priced at £24.95 ex. VAT, and Britain since the 1930s at £12.00 ex. VAT. Further details from Longman Logotron at 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS, tel. 0223 425558, fax 0223 425349.



NEWSFLASH

Wimp Programming for All
On Acorn RISC Computers

by Lee Calcraft and Alan Wrigley

We believe that Wimp Programming for All is the definitive book on this subject for all users of Acorn RISC computers.

This book, provides programmers with a complete introduction to all the techniques involved in writing multi-tasking Wimp programs to run within the RISC OS Desktop environment. No prior knowledge of the Wimp is assumed and the tutorial style of the book will enable all programmers to understand the concepts involved and to develop their skills in writing high quality programs within the Desktop environment.

Contents

***Wimp Programming for All** derives from the highly popular series of articles originally published in volume 3 of RISC User magazine and written by Lee Calcraft. This has been extensively revised with substantial additional material, all brought up to date for RISC OS 3.*

To support the book there is a disc containing all the programs (at different stages of development) as listed within the book, together with additional supporting applications.

The book consists of ten main chapters and a number of appendices:

- Chapter 1: Introducing the Wimp
- Chapter 2: Windows
- Chapter 3: The Wimp Poll Loop
- Chapter 4: Error Handling
- Chapter 5: Icons
- Chapter 6: Menus
- Chapter 7: Redrawing Windows
- Chapter 8: The Wimp Message System, Loading and Saving Data
- Chapter 9: Templates
- Chapter 10: Printer Drivers and Outline Fonts

- Appendix A: RISC OS 3
- Appendix B: Indirection Operators
- Appendix C: Application Resources
- Appendix D: Setting up a sprite area
- Appendix E: The Wimp Programmer's Toolkit
- Appendix F: SWI calls described in this book

Special offer for RISC User subscribers: Buy the book and disc together for just £14.95 (code BK11)

Code		
BK12	Wimp Programming for All (book only)	£12.95
BK13	Wimp Programming for All disc	£ 4.95
BK11	Wimp Programming for All Book & Disc	£14.95

Please add £2 p&p in each case except BK13 £1 p&p

RISC developments

RISC Developments, 117 Hatfield Road, St Albans, Herts AL1 4JS.
Tel 0727 843600 Fax 0727 860263

A MAJOR PLAYER IN MULTIMEDIA DEVELOPMENT

Cumana is helping UK schools to develop their own multimedia resources incorporating enormous amounts of text, graphics, sound and moving pictures, by becoming a major sponsor of the National Educational Multimedia Awards (NEMA).

The awards, which were launched by the National Council for Educational Technology, the government body responsible for promoting the effective use of new technology in schools, are designed to encourage the creative use of multimedia in education.

Further information on the NEMA Awards can be obtained from NCET, Milburn Hill Road, Science Park, Coventry CV4 7JJ, tel. 0203 416994, fax 0203 411418.

PROFESSIONAL PRINTING RESULTS WITH REPRO

Following the launch of the new printer drivers from Acorn, Oak Solutions has launched Repro, a professional tool which allows the user to manipulate the exact translation of colours from screen to paper. Repro gives complete control over screen size, screen angles, gamma correction, grey balance and black removal. Repro costs £50 ex. VAT and can be obtained from Oak Solutions on 0532 326992.

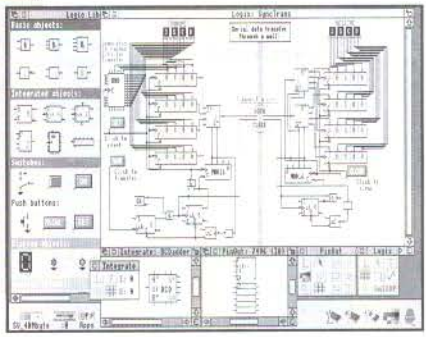
ARM AT THE CORE OF IBM'S NEW SERIAL INTERFACE

IBM and VLSI have recently announced plans for the development of a new communications system known as the Serial Storage Architecture (SSA) interface. VLSI will develop and manufacture ARM-based chips for SSA applications that will be available for purchase and use by IBM and others in future storage products. SSA, which is being promoted vigorously as an industry standard by IBM, offers much higher operating speeds - up to 80Mb per second - than existing serial protocols such as RS232.

ACORN ENSURES QUALITY FOR CUSTOMERS

Acorn has responded to market demands by introducing the Acorn Hardware Conformance Scheme. The scheme is designed to offer customers greater peace of mind when buying third-party hardware upgrades for Acorn computers, and allows hardware developers whose products conform to Acorn's specifications to display the 'Acorn Hardware Specification Compliant' logo on their products. Developers have responded very positively to the scheme. Peter Wild, Managing Director of Wild Vision, had this to say: "With this new scheme the customer will be able to consider not just the price but technical quality as well when making purchasing decisions."

DIGITAL DESIGN AND SIMULATION



Logix, from Silicon Vision, is a suite of four inter-related applications that allow the user to design and simulate logic circuits, either assembled from a library of basic logic gates and ready-made complex logic circuits, or from the user's own circuits. The package costs £99.95 ex. VAT and is available from Silicon Vision, Signal House, Lyon Road, Harrow, Middlesex HA1 2AG, tel. 081 422 3556, fax 081 248 3589.

AB DICK INSTALL ACORN SYSTEM AT PURBECK PRESS

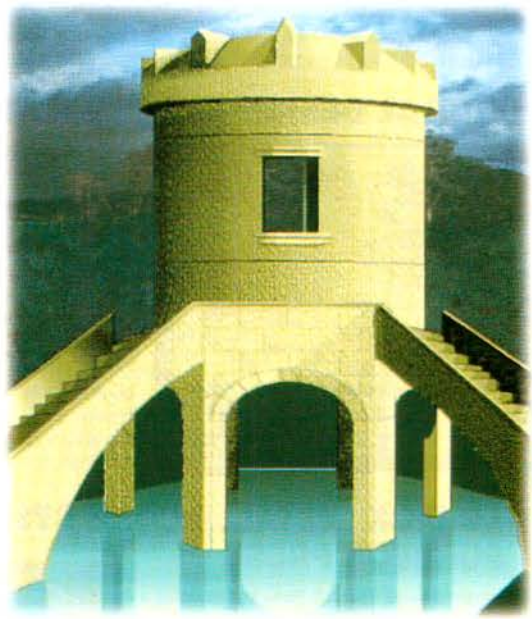
Swanage-based Purbeck Press has installed a Graphtex 400 Publishing System from AB-Dick. The top-of-the-range GraphTex 400 digital production system comprises an Archimedes-A5000, 21" monitor, flatbed colour scanner and 600dpi A3 laser printer. Partners Jim Farrer and Graham Jordan found that, "the Acorn-based system offers all the functionality of a high-end Mac at very impressive speeds and is competitively priced." Purbeck Press is a typical high street printer that attracts the majority of its work from within a 30 mile radius of its print and stationery retail outlet, which acts as a 'shop front' for the printing works situated at the rear.

SAMSUNG LICENSES RISC TECHNOLOGY FROM ARM

On the 23rd May in New York, Samsung Electronics became the latest major company to sign a licence to use RISC technology from ARM Ltd. Under the terms of the agreement, Samsung will embed ARM6, ARM7 and ARM610 RISC technology in products to be jointly developed by Samsung and ARM. Initially, Samsung will apply the ARM 32-bit technology to a number of the company's own peripheral products, including hard drives, laser printers and multimedia processors. "The convergence of sophisticated digital technologies, from wireless personal digital assistants and cellular fax/phones to set-top boxes and interactive TV, is creating a critical need for low-cost, high performance computational power embedded in these devices to control them," said Hyung Lee Roh, director of Samsung's Micro Component Business Group. "ARM's versatile RISC technology meets that need, and will spearhead Samsung's strategic thrust into these emerging markets." Based in Seoul, Samsung Electronics is a world leader in the electronics sector, with 1993 revenues totalling $10 billion.

PRO : Artisan 2

TOWERING ABOVE THE REST



Up to 50% Discount

Don't take our word for it see the reviews and previews – ProArtisan 2 has been completely rewritten. And just to show how good we think it is we are making you a special offer until 31st December 1993. Send us your program disk from **Artisan, Artisan 2** or **ProArtisan** with a cheque for £67.50 and we will send you a full **ProArtisan 2** pack – that's a full **50% trade in allowance** as a thank you for supporting Clares in the past.

We haven't forgotten the rest of you who have not bought a Clares art package in the past. We are also offering you a special discount price of £87.50 if you return your program disc from one of the following:

Atelier, KidPix, 1st Paint, PrimeArt, Painter Plus, Imagine, Imagery, Photopia, Revelation, Revelation 2, Revelation Image Pro, or any other purchased art package costing over £35.

If you don't want to trade a package in then ProArtisan is still a bargain at just £135 inc V.A.T. Send off your cheque today or ring us with your credit card NOW on 0606 48511

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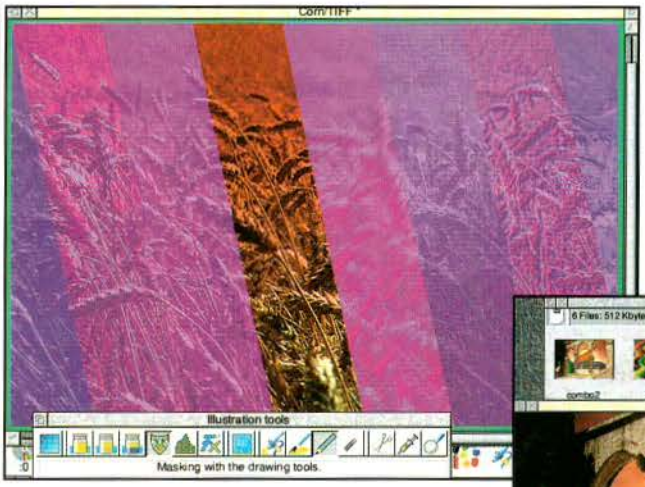
Photodesk

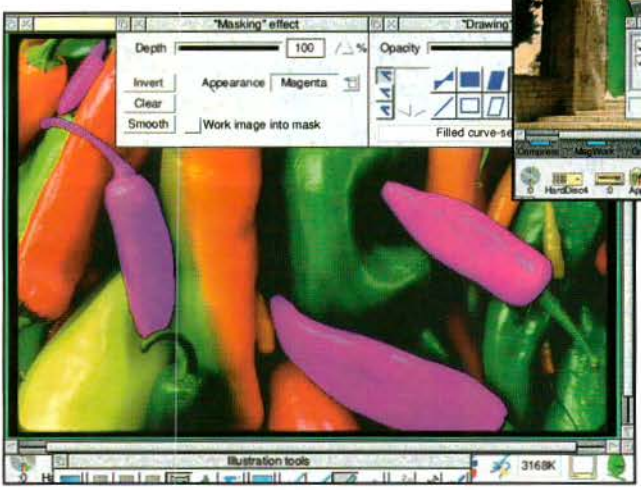
Alan Bonsor puts paint brush to canvas as he tries out Photodesk - Spacetech's new image processing and photo-retouching application.

INTRODUCTION

After I was asked to write this review I spent quite a long time - too long for the editor's liking - using and experimenting with Photodesk's multitude of functions before putting pen anywhere near paper. I had a good reason however, and I hope that when you turn to the example page you will understand it. Whereas in a review of a sound editor it is impossible to let the reader 'hear' what the program can do, the same is not true for a graphics package. I wanted to let Photodesk 'speak' for itself. See for yourself whether I have succeeded.

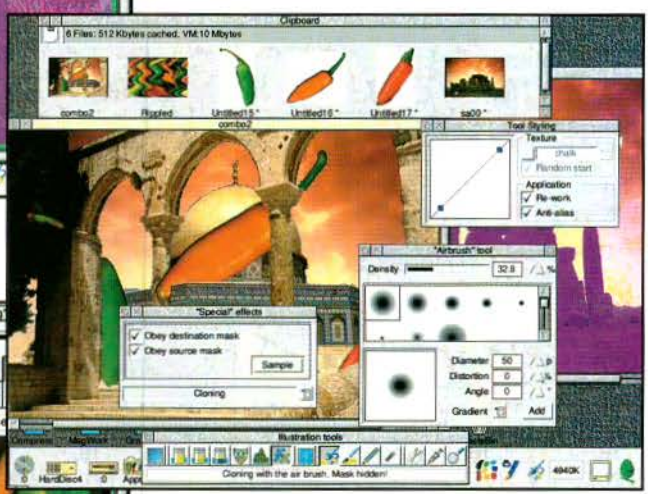


A mask can be created with any tool - in this case the filled parallelogram - and moved using the shift key.



Many operations can have as many as one million permutations. The depth of a mask can be from 0-100% in steps of one-tenth percent, as can the capacity of the application tool. Combined, a staggering variety of effects can be created.

Photodesk is billed as a 'studio-quality' image processing and photo-retouching application. Acorn users have never been short of graphics and image processing software - just take a look at the Image Processing Group Survey (7:2) in which no less than ten such packages were examined. However, the two words that everyone has been waiting to hear are 'studio quality'. Until now, all Acorn graphics programs have been constrained by the Archimedes' 8-bit colour, rendering them unviable for professional use. With up to 16 million colours and a maximum of 256Mb of RAM, the Risc PC is the ideal platform for 'studio quality' image manipulation. Photodesk is one of several new packages to take advantage of this power and offer Risc PC users similar functionality to that provided by the industry standard graphics manipulation package, Photoshop, on the Macintosh.



Photodesk's dialogue boxes are a pleasure to work with.

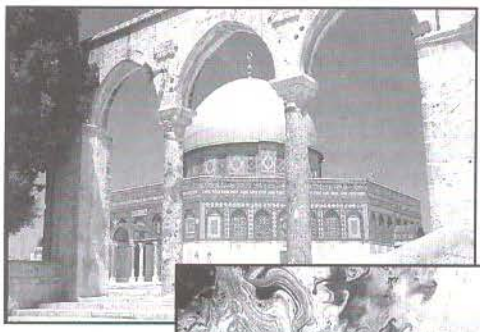
THE USER INTERFACE

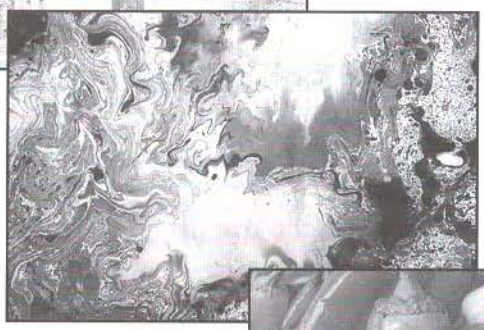
From the moment you double-click on its icon and are introduced to its title page, you start to

realise that Photodesk is something special. The program oozes features, professionalism and quality.

Photodesk's user interface is outstanding - borne out by the fact that I barely glanced at the pre-release manual during the entire time I was preparing this review.

Vitally important for image processing is memory - the more the better. Photodesk uses a fast virtual memory system which allows you to edit images that are considerably larger than your computer's free memory. Whether you plan to work with a dozen 200K Sprites or several 20Mb TIFF images, so long as you have sufficient hard drive space, Photodesk will handle anything that you can throw at it. The individual images used for this review each came to over a megabyte in size, and the final combined image 6.5Mb. This is still fairly small however. An A4 page scanned at 300dpi in full colour requires around 20Mb, and Photodesk handles it perfectly, even on a 4Mb Archimedes 410. Believe me, I tried!





These are the four images in their original states. The corn field and the oil were taken from a Macintosh 'textures' CD-ROM, while the other two form part of the RISC PC image collection.

Quite staggeringly, Photodesk allows you to perform almost any operation with any tool, and the majority of the tools and effects can each have 1,000 different strength settings (from 0-100% in tenths of a degree). Combine a tool with an effect and 1 million variations become available. This is the first time I have ever seen this type of versatility in any program on any computer system.

Photodesk provides a single tool bar containing fifteen beautifully designed icons. By default, the tools provided are the 'illustration tools'. These include the air brush, paint brush and drawing tools, the magic wand, which allows you to perform operations on a range of colours, and the various colouring and processing functions. Clicking on any of them pops up the relevant dialogue box. These dialogue boxes are excellent examples of what RISC OS software should look like. They follow Acorn's guidelines to the letter - uncluttered, self-explanatory, and neither too big nor too small, they are a pleasure to use. And unlike many other popular applications, Photodesk's dialogue boxes don't obscure 75% of the desktop.

A extensive range of cut-and-paste functions are accessed by clicking on the scissors icon. This switches the tool bar into cut-and-paste mode, from where you can cut out objects using a very well implemented lasso, the magic wand, a drawing tool - a piece of text for example - or by simply dragging over the relevant section of the image. The cut-out object can be pasted onto a different section of the same image, a different image, or the clipboard, and all current settings have full effect. Thus an object can be made to fade gradually into another image by using the 'effect gradient' when pasting.

Photodesk's undo facility is nothing less than amazing. It is possible to undo any operation at any time and with any tool. You can create a mask with the magic wand at 100% strength and then 'undo' part of the mask with the air brush at 25%. Merging several images together couldn't be simpler, as you can simply paste any object over any other one and then use the air brush to 'fade' the joins between the various objects. You wouldn't waste your time doing this, however. The 'feather' option does the fading for you.

IMAGE PROCESSING

Technically speaking, image processing is "the application of mathematical algorithms to the data values within an image to produce variations or enhancements to the image". Although this may sound incredibly complicated, image processing simply enables you to do things such as brighten, darken, sharpen, smooth and change the contrast of an image.

Photodesk provides a very substantial 34 image processing functions divided into five categories: Enhance (sharpening etc), Gamma (contrast control), Emboss (textures), Math (solarizing etc) and Equalise (histogram control). As if this weren't enough, you can also customise most of these and add your own functions.

Suffice it to say, Photodesk's image processing functions perform as well as, if not better, than those provided by Photoshop.

MASKING

Of the four images that make up the main example, three of them were created making extensive use of masking. A mask is just what it says. It prevents an operation from affecting the area that is covered by the mask. Photodesk's masking facilities are extraordinarily powerful and flexible. The program uses an 8-bit mask, which means that the mask can have 'depth'. You may decide for example that you want an operation to affect the light areas of an image more than the dark areas. By choosing the 'work into image' function, the mask will adjust its strength according to the colours of the image. As with all other operations, a mask can be created using any tools, from the magic wand - useful if the image contains well-defined objects - to the drawing tools - used to create the bands of corn in the example - to the airbrush and so on.

Since the launch of the Archimedes back in 1987, I have used almost every art program that's ever been released for that computer. Photodesk's masking facility is the best that I've seen!

IMPORTING AND EXPORTING

Photodesk can import and export a variety of different image formats. These include the entire range of Archimedes Sprite formats from 8 to 32-bit, TIFF, Clear, JPEG and PhotoCD. I would have liked to have seen support for EPS colour separations as well, as I use these extensively on the Macintosh with Quark Express. Spacetech does say that this is one of the facilities the programmers may be adding in a future release.

Image loading and saving are extremely fast - considerably more so than with programs such as ChangeFSI and Translator, and like greased lightning when compared to Photoshop on the Macintosh.

SYSTEM REQUIREMENTS

Image processing and photo-retouching is, unfortunately, a very expensive exercise. Your computer can never have too much memory, too large a hard drive or too fast a processor.

Photodesk allows you to adjust the memory it grabs dynamically as you work. You can thus force it to free computer memory without having to quit the application or discard images. It does this by storing more or less of the images being edited in the virtual memory on the hard drive. I did this review on a Risc PC with 10Mb memory and a 410Mb hard drive. In order to try and cut down excessive disk access I allocated a 5Mb memory cache to Photodesk. In no time at all, it had borrowed 39Mb of the hard drive to use as virtual memory! Even with the power and speed of the ARM6 processor, I still spent some time twiddling my thumbs while Photodesk munched, in the nicest sense only, its way through its temp file on the hard drive transferring parts of images to and fro.

I also used Photodesk on a very souped-up Archimedes 410. It works very well, but it's like connecting a pair of Celestion speakers to an Amstrad hi-fi - there is just no way you will appreciate what it can actually do.

The following 2 pages demonstrate the various effects that can be created with Photodesk.

Photodesk is an extraordinarily powerful application. To get the most out of it, you'll need to run it on an extraordinarily powerful computer - the Risc PC.

Don't bother buying Photodesk to run on an Archimedes unless it has at least the following: RISC OS 3.1, a 40Mb hard drive, 4Mb memory, an ARM3 processor and, if you want to appreciate its colour-capabilities, a 16-bit colour card and a high resolution colour monitor.

CONCLUSION

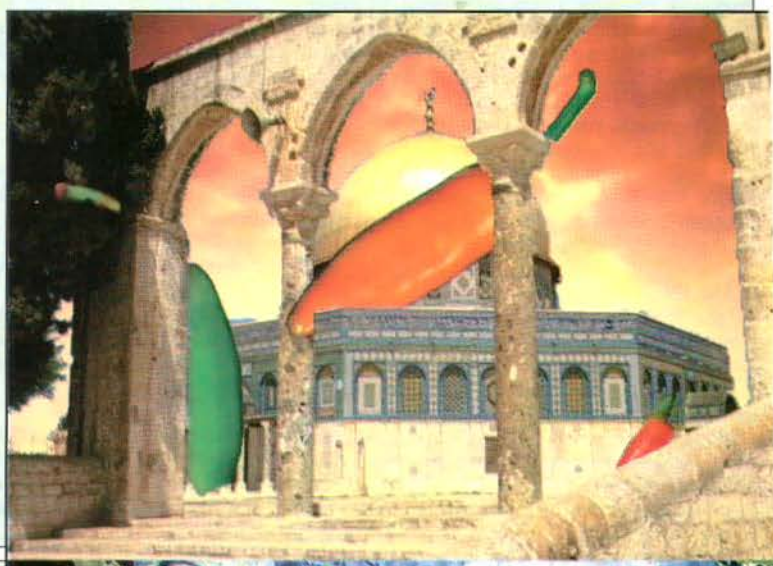
Photodesk is the first graphics application that I have really enjoyed using on an Acorn computer. It's fast, incredibly flexible and has a highly intuitive user interface that makes it accessible to anyone. With Photodesk you don't have to be a professional graphic designer or artist with years of experience to create 'works of art' of which you can be proud. If you are a professional graphic designer from Macintosh territory, you will, with some exceptions, find that Photodesk is a powerful and creditable alternative to Photoshop. It doesn't yet offer full Photoshop functionality, but it's getting there. You will also be quite impressed with the price - at £169.95 it is considerably less expensive than Photoshop, which varies from around £300 to well over £500.

PRODUCT INFO

Product	*Photodesk*
Supplier	*Spacetech* *21 West Wools,* *Portland,* *Dorset DT5 2EA*
Tel.	*0305 822753*
Fax	*0305 860483*
Price	*£169.95 ex. VAT* *£199.69 inc. VAT* *Site Licence £595.00 ex. VAT*

IMAGE COMPOSITION

Photodesk's comprehensive masking facilities make image composition an absolute dream. To create this image, various objects were 'sliced' out of an image and air brushed into this one. When I first attempted to create the mask to enable me to extract the various objects, I ran into problems with the magic wand. Although a magic wand will work effectively on clearly defined objects, as soon as you have overlapping objects of the same colour - note the plethora of green in the vegetable image on the previous page - creating masks with the magic wand becomes very difficult. In the end I found it simpler to use the drawing tools to create the mask by drawing a filled Bezier curve around each object. Fast and effective. In order to allow the cut-out objects to be air brushed onto this image, appearing behind certain objects and in front of others, a second set of masks was created, this time covering various parts of the pillars and building. The objects were then simply sprayed on. The sky was taken from a third image and didn't require the use of any masking at all - the magic wand cloned it in two easy steps!



SILK SCREENS AND STENCILS

One of Photodesk's more unusual facilities is the ability to import Draw files. These can either be incorporated directly into the image, or, more impressively, turned into masks and used as 'silk screens' or stencils. In this case the colours used in the Draw file affect the 'depth' of the mask. Importing the Draw file is as simple as dragging it into the image window. A dialogue box will appear, allowing you to alter the Draw file's scale, rotation and position. Once these have been set up correctly, you can click on the 'To mask' button to turn the Draw file into a mask. This image was created by dragging in two Draw files, resizing and positioning them and turning them into masks. The mask was then inverted to allow special effects to be applied to the area contained within the Draw files and not the surrounding area. The effects, as you can see, can be very impressive. An edge detection effect was applied to the unmasked area using a 100% strength magic wand. The resulting effect is, to me at least, reminiscent of a cave/rock oil painting, combined with just a little bit of sand and gravel thrown in for good measure.

IMAGE PROCESSING

This image demonstrates just a few of Photodesk's many image processing functions. A mask was created using the filled parallelogram tool, and this was then shifted and inverted to enable each bar to have different effects applied to it. The first bar has had a simple blue tint added. The second one has undergone two operations: it was first sharpened using a 'fine sharpen' at half strength, after which its contrast was increased. The next section shows how the image looked originally. The fourth bar was created using the 'Effect gradient' curve combined with 'Linear compression'. An effect gradient allows an operation to fade across an image. A combination of image processing and special effect routines were used to create the the fifth bar. The image was sharpened and solarized, after which an angled 'Motion blur' was applied to it. The next bar shows off the differences between toning and filtering, as well as the effects of the embossing function. Toning was used to turn the top half of the bar into monochrome. The seventh bar demonstrates the bas-relief effect, while the last one is a negative of the original image.

SPECIAL EFFECTS

In the introduction to the manual, it states that Photodesk allows the user not only to 'retouch' photography, but also to produce original artwork. It does this by combining computer simulations of traditional artwork production methods such as brushing, air brushing, drawing, masking, screening, cut and paste and so on, with techniques that are unique to the computer, such as image processing, gamma correction, cloning, Bezier path generation, selective filtering and many others.

Certainly unique to the computer is a category called special effects. Photodesk provides five special effects: cloning, ripple, motion blur, smudge and smear, and camera lens, and Spacetech says that more are being worked on. This image demonstrates just one of these techniques - the ripple. Ripple is not limited to a single style or direction. It is possible to have curved or straight ripples either horizontally or vertically, and you can define the type of ripple you want by 'drawing' the ripple profile on the image.

Choosing a Monitor for the Risc PC

Lee Calcraft compares Acorn's AKF 60 and AKF 85 monitors, as supplied with the Risc PC

The Risc PC is supplied with one of two monitors: the 14" AKF 60 or the 17" AKF 85. The first, manufactured by Microvitec, has a 0.28 dot pitch, while the latter, from the Philips corporation, has a marginally better 0.27 dot pitch. Both meet the so-called MRP II certification for low radiation emissions, and the EEC Display Screen Directive, though the AKF 60 additionally offers an Energy Star compliant power-saving mode in which power consumption drops to 20 watts when the monitor is not in use.

Both monitors come in a Pantone Cool Grey casing which closely matches the Risc PC, and both have a tilt and swivel base. But there are some differences! The most obvious is bulk: for although the screen diagonal of the larger monitor is only 3" greater than its Microvitec counterpart, it really is rather a big brute. It weighs 21 kg, as against the modest 12.5 kg of its rival, and is all but 17" in height, compared to the diminutive 13" of the Microvitec. This means that if you stand it on a two-slice Risc PC the combined height is a towering 24" - so much for miniaturisation! The Microvitec by contrast sits very neatly atop the Risc PC. In fact it is positively discreet by comparison.

DON'T YOU JUST LOVE TO BE IN CONTROL ?

But with indiscretion comes greater control. The AKF 60 has a set of four controls on the front, allowing adjustments of picture height and horizontal position as well as the usual brightness and contrast. There appears to be no easy way to adjust the width or vertical position, and there are no dedicated adjustments for individual screen modes. Having said this, the model under test largely retained its settings during all screen mode changes.

The AKF 60 and AKF 85 are supplied with the Risc PC 600. They are also available separately from Acorn dealers at £325.00 and £999.00 (ex. VAT) respectively.

However, the Philips monitor does offer a major improvement here. It boasts a 16-character LCD display, and this provides a continuous readout of the pixel resolution of the current mode, which lights up when mode changes are made. Better still, you can fine-tune the settings for each mode, using a simple set of controls on the front panel. Just press a button, and the LCD display lights up and cycles through the options, which include horizontal centring, screen width, screen height, vertical position, pin cushion/barrel distortion, and trapezoid distortion. Each can be adjusted using the Plus and Minus buttons, and the setting can be memorised by pressing a Memory button. This is trivially easy to use, and ensures that in every mode (and there are 15 user definable monitor modes), you can have an utterly square and properly centred picture.

SCREEN RESOLUTION

Both monitors provide SVGA performance, and offer the same set of screen resolutions when used with a Risc PC sporting 1Mb of VRAM:

1280 x 480
1600 x 600
480 x 352
640 x 480
800 x 600
1024 x 768

Additionally, AKF 85 users blessed with 2Mb of VRAM are offered the opportunity of matching pixel resolution to OS units with an ultra-high resolution mode of 1280 x 1024 (which the lack of sufficient VRAM sadly prevented me from experiencing).

In comparisons made in the available modes the heavyweight outperformed its more compact rival in two ways. Firstly, the Microvitec showed a greater softening of focus at the corners of the screen. For example, I found that reading system font in Edit in a 1024 x 768 mode was just a little uncomfortable on the AKF 60 when the text was positioned at the top left of the screen. By contrast the softening effect was almost imperceptible on the Philips.

The second factor concerned the apparent screen resolution in the highest resolution modes. For although both monitors provided a good stable display in all desktop modes, the Philips gave a clearer picture in the more challenging modes. For example, it was no problem to type and edit text in 14 pt Homerton medium in the 1600 x 600 mode on the Philips (in fact I am doing exactly that at the moment). And while this was also possible on the Microvitec, the text was less distinct.

CONCLUSION

If you are buying a Risc PC, which monitor should you go for? Both perform well, and both represent good value for money, but the Philips is three times the price of the Microvitec (or £400 dearer when bundled with a Risc PC), and this is not an insignificant sum. Also the 17" is really a lot bulkier than its smaller rival, which sits neatly on top of the computer. By contrast the resolution of the Philips is superior to that of the Microvitec, and it offers excellent control over the features of each screen mode via its LCD readout and selection buttons. So, over to you.

More Memory for the RISC PC

David Spencer unravels the world of Risc PC memory upgrades.

One feature of the Risc PC is its much improved flexibility when it comes to RAM upgrades. However, such flexibility brings with it a wealth of potential confusion, and in this article we aim to explain briefly what's involved in upgrading the Risc PC's two types of RAM - DRAM and VRAM.

DRAM UPGRADES

Dynamic RAM (DRAM) forms the common or garden RAM in your computer - in other words the place where programs and data are stored. In the Risc PC, DRAM can be fitted in the form of one or two industry-standard SIMMs (single in-line memory modules), as used in most PC compatibles. These are small cards which clip into special sockets on the computer's main board. For upgrading, SIMMs are as easy to remove as they are to fit.

Each SIMM fitted can currently have a capacity of 1, 2, 4, 8, 16, 32 or 64Mbytes, giving a total of 128Mbytes with two SIMMs. In the near future (a year or so), 128Mbyte SIMMs will become available, allowing the full potential of a 256Mbyte machine to be achieved. All the standard Risc PC models have just one SIMM fitted, containing 2, 4 or 8Mbytes. Obviously, a SIMM of any of the above capacities can be fitted to the second socket, but ultimately, you will probably need to replace the original SIMM as well. If you're lucky, you may find a dealer who will take it as a trade-in.

There are two basic ways of obtaining SIMM modules. Firstly, you could go to a reputable Acorn dealer, or developer, and buy with the assurance that you will get a product that works in the Risc PC. The alternative, which can keep the cost down, is to go to a PC supplier, such as those advertising in PC magazines. However, there are pitfalls to this. Firstly, they must be 72-pin SIMMs of the type used in Pentium PCs, and not the much more common 36-pin devices found in most PCs. Secondly, they must meet the Acorn specification for Risc PC DRAM. This not only specifies the basic access speed of the RAM (which must be 70ns or faster), but also defines many more parameters that must be matched. Whilst most SIMMs will be suitable, some won't. To this end, Acorn are drawing up a list of approved SIMM types which will be available from their customer services department.

As far as pricing is concerned, you can expect to pay around £150 + VAT per 4Mbytes for SIMMs, so a 32Mbyte module would be around £1200. However, be warned - the 64Mbyte SIMMs are very expensive at the moment, and if you really must have them, then be prepared to pay a lot for the privilege.

VRAM UPGRADES

The second type of RAM found in the Risc PC is video RAM (VRAM) which, as its name suggests, is primarily intended for use as screen memory, although any spare becomes available to other applications just as if it was DRAM. If no VRAM is fitted, as is the case for the bottom-of-the-range Risc PC, then DRAM is used for the screen, although this is limited to 1Mbyte, and its use slows down the computer. The other two Risc PC models have 1Mbyte of VRAM as standard, but although this solves any speed problems, it still restricts the available choice of modes. For example, it can't even cope with normal VGA in 16 million colours. You are therefore well advised to upgrade to the maximum 2Mbytes of VRAM at a very early stage.

Unfortunately, although the VRAM module is a plug-in card similar to the DRAM SIMMs, it is not an industry-standard product, and so choice is limited. Acorn themselves sell a 2Mbyte VRAM module at £199 + VAT, and HCCS have just launched their rival product at £149 + VAT. No doubt many other third parties will follow suite. If you are upgrading a machine that already has 1Mbyte of VRAM, then the old module must be removed first. Rather than throwing this away, you may be able to trade it in against the 2Mbyte unit. Indeed, you may find a dealer who can upgrade your original 1Mbyte module to 2Mbytes simply by soldering some extra chips on - though your warranty is unlikely to survive such an upgrade.

AND FINALLY

Don't be fooled into thinking that memory sizes of tens of megabytes are pure pipedreams. Software is evolving quickly, and becoming ever more memory hungry, and what seems a ludicrously large amount of memory now, may barely be enough next year. My advice to any Risc PC owner would be to upgrade to 2Mbytes of VRAM and at least 8Mbytes of DRAM as soon as possible in order to be prepared for the future. But remember, the Risc PC upgrade market is in its infancy, so be sure to shop around for sound advice and good deals.

ProArt for Art's Sake

Mike Williams assesses the latest developments in Clares' ProArtisan family: Photo-CD and 24-bit colour capabilities.

Clares have released two new variants of their popular ProArtisan art and image processing package. These are ProArtisan2CD and ProArtisan24. The differences between these two developments may not be immediately obvious, especially as ProArtisan24 also contains Photo-CD support identical to that in ProArt24. However, the distinctions are clear enough once you know. ProArt2CD is essentially ProArt2 with built-in Photo-CD support, but like ProArt2 it uses 8-bit colour for sprites, and as such will run on all Acorn 32-bit systems.

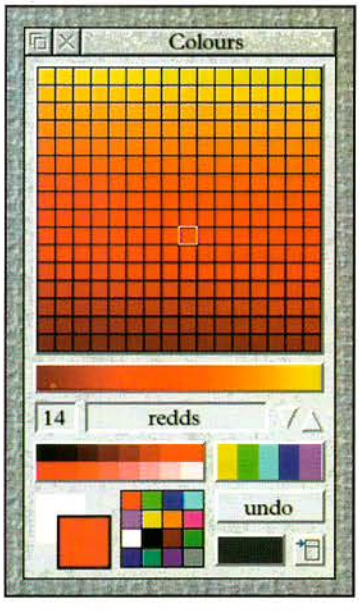


Figure 1. The ProArtisan24 colour picker

ProArt24, on the other hand, not only has support for 24-bit colour, but will only work on the new Risc PC. While ProArt2CD effectively represents the end of the line for ProArt as far as older machines are concerned, ProArt24 marks the start of a new generation of art packages by Clares.

In this review we shall look first at ProArt 2CD, to see what the 'CD' enhancement has to offer, and then we shall take a first look at ProArt24.

ProArtisan2CD

If purchased outright you get the complete ProArtisan2 package (two discs and a 78 page manual), plus two CD-ROMs and a manual supplement. ProArtisan2 has already been reviewed in RISC User (7:1), so we shall concentrate on the 'CD' add-ons. You may also like to refer to the RISC User survey of image processing packages in 7:2.

The fact that two CD-ROMs are included in the plastic case is not immediately obvious. The CD immediately visible is Clares' ProArt CD ROM with the new ProArt software and other resources; the second (almost hidden) is Cumana's Photo-CD collection Volume 1, containing 82 Photo-CD images. In use, the CD-ROM drive can be treated like any other filing system, and ProArt2CD can be loaded direct from the CD-ROM without any special installation or registration procedure.

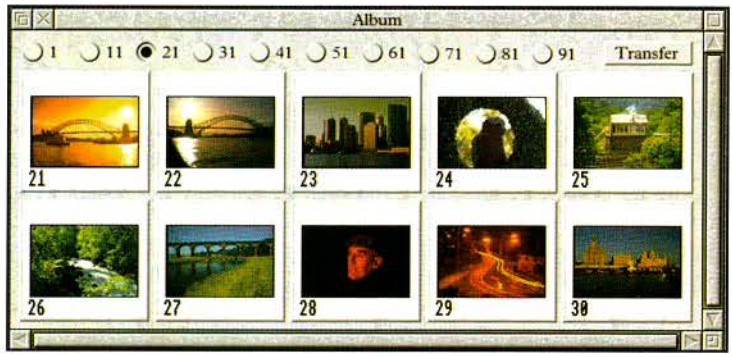


Figure 2. Display of miniature Photo-CD images from the Cumana collection

ProArt2CD's icon bar menu now has three extra options relating to CD-ROM usage: *Show CD Album, Photo CD Info* and *Eject CD*. These are for accessing Photo-CD images which can be loaded directly into ProArt2CD with its built-in Photo-CD support. Inserting Cumana's Photo-CD album into the drive and selecting *Show CD Album* opens a window showing, in miniature format, the first ten images on the disc (see figure 1). Controls across the top allow different groups of images to be selected up to an apparent maximum of 200 (using the Shift key).

Figure 3.
Sample of ProArt24 artistry

Double-clicking on any miniature loads it into ProArt2CD, while clicking on the *Transfer* button in the Album window will load all the visible images into ProArt's sprite pool. Remember that the original image is in Photo-CD format. When loaded into ProArt, an image is converted into 8-bit sprite format (all handled by Acorn's Photo-CD module). You can control the conversion in a number of ways, using a *Control panel* window. The choice of resolution will depend as much as anything on how much memory you have available. The *Diffuse* option, which is recommended, uses dithering techniques in the PhotoCD module to provide the best conversion for colour. The *Clip* option allows part of a picture to be loaded, and is useful in selecting just part of a higher resolution image.

There is one irritating 'feature' built into this control panel. Selecting Greyscale conversion alters ProArt's palette so that all images, including the Photo-CD Album display, appear in grey scales. Unfortunately, the only way of restoring a normal colour palette is by loading a colour image - the manual supplement does tell you this, but it's still annoying.

What else does the ProArt CD-ROM contain? In addition to the examples and other applications from the ProArt2 Resources disc, there's also a directory containing over a hundred photos in sprite format. These are mostly of the holiday snapshot variety, good enough as far as quality is concerned, but otherwise a fairly random selection from various sources.

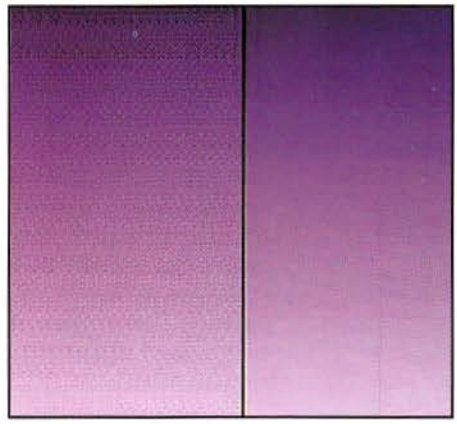


Figure 4.
A graduated colour fill in ProArt2 (8-bit colour) and ProArt24 (24-bit colour)

Is it all worth it? In a nutshell, yes. The point about ProArt2CD, is not I feel so much in the fact that it's on CD-ROM, nor that you get a collection of eighty plus Photo-CD images, but the simple fact that it accepts the Photo-CD format. Any photographs can now be readily converted into CD-ROM format, and a collection on CD-ROM can be built up over a

period of time (though your CD-ROM drive must be of the 'multi-session' variety for this to work properly). Think what schools and colleges can do with that, and the graphic designer and artist. Mind you, I am sure that endless holiday snaps can be just as boring in Photo-CD format!

NOTE

All the images on Cumana's disc are in standard Photo-CD format, and can be displayed in 24-bit colour if this is supported by your machine and the software you are using. ProArt2CD only supports 8-bit colour, so the images are converted using dithering into 256 colours.

If you already have ProArt2 and now need Photo-CD capability, buy it. If you want ProArt2 buy. But there are and will be other, cheaper ways (for example, PhotoView supplied with Acorn's CDFS 2.2 or later) of merely accessing Photo-CD, which seems destined to become a standard input format for all art and image processing packages in the future.

ProArtisan24

As with ProArtisan2, ProArt24 is supplied on two discs, for the moment with the ProArt2 manual and a 16 page supplement. In due course a full ProArt24 manual will be published. The version available for review included only a single 24-bit sample image, plus the set of 8-bit images supplied with ProArt2. Remember, though, that ProArt24 does included support for the Kodak Photo-CD format, as with ProArt2CD reviewed above.

However, it is not merely in its ability to handle 24-bit sprites that ProArt24 differs from its forebears: there are many other consequential changes as well. In good old 256-colour days one palette window was sufficient to show all colours, but with 32 thousand or 16 million colours that is clearly no longer possible. RISC OS 3.5 (on the Risc PC) provides its own colour picker, as used in Draw, but ProArt24 uses its own form of colour picker as well as giving access to Acorn's.

THE COLOUR PICKER

ProArt24's picker is quite complex (see figure 3), and takes some getting used to. It displays individual 256-colour palettes, and there are currently sixteen such palettes supplied, with names like Earth, flesh, and villa which are suggestive of particular types of scene, and others such as redds, magyell, and magcyanyell which gives a range of shades as suggested by the name.

There is also a Picker palette which you can use to select and mix your own palette of colours. A sixteen block working palette can be used to transfer colours from palette to palette, and a graduated palette can be created between any two colours. This can be used for blended fills as in ProArt2, but with so many colours the dither option is no longer needed. So use the colour picker to create your own colour fill and apply to the image. With 32 thousand colours in use the results were disappointing, with a degree of obvious banding, and comparing somewhat unfavourably with dithered colour fills in 256-colour modes. Change to 16 million colours and the true differences are revealed: ProArt24's colour graduated fill is now superb, that from ProArt2 shows its true dithered origins (see figure 4).

The colour picker window also gives immediate access to Acorn's standard version, and I found this essential for locating colours distinctively different to any previously used. Acorn clearly hopes (and expects?) that applications will use their standard picker, so that users have a uniform approach to colour selection within the desktop. Clares obviously believe their approach to be superior, and it certainly has its merits in the context of ProArt24. However, I feel the Acorn version is also an essential tool for ProArt24 users, and I feel that ProArt's documentation should give more prominence to it.

REALISTIC PAINTING

With painting under ProArt24, the options have become much more oriented towards traditional materials, a move which will no doubt please computer-based artists, and which is in line with art packages on other platforms (such as Painter on the Apple Macintosh). Excellent though this trend is, what is missing is the opportunity to select from a wide variety of papers and other materials on which to 'paint' - this is one potential area for future development.

The naming of the painting functions can potentially lead to confusion as to the end result. For example, if you create your picture in 'oil' colour and then apply 'water' to this, the outline will still become blurred, which is not necessarily what you would expect. However, it must be remembered that at present ProArt24 is a purely

pixel-based package - the tools and other features merely determine how colour is applied to the page. Once colour is there it has no other attributes at all.

Control of brush size and style has also changed, now using slider bars rather than a menu of shapes and sizes, and a third slider controls the intensity, or opacity, with which the selected colour (or pattern) is applied.

PATH POOL

ProArt2 already worked with a so-called sprite pool, allowing sprites to be loaded and used as required. ProArt24 now also has a path pool, in which path type objects (Draw files) can be stored, and all text created is also added automatically to the path pool. However, the path pool is more limited, and there appears to be no way of saving the path pool as there is with the sprite pool, more's the pity.

OTHER NEW FEATURES

A number of other features within ProArtisan have been modified or added. The previous use of a 'magic pen' and 'transparent' colours for picking up irregularly shaped sprites become impractical with 24-bit colour, so these options have been removed. The 'magic wand' now remains the primary tool for such purposes.

Cloning has been extended to clone from screen, sprite, sprite colour or sprite texture, the latter allowing you to import any existing greyscale textures into the sprite pool for use in ProArt24. Save modes also reflects the new screen mode approach in terms of number of colours and resolution, but the use of 'pixels per inch' by ProArt24 may not relate too readily to most users' knowledge of screen resolution.

SUMMING UP

ProArtisan24 is a clear indicator of Clares' intentions for the future development of ProArtisan. However, one cannot but feel that the release of ProArt24 in its present form has been a little premature. Apart from its obvious 24-bit colour capability and some consequent revisions and extensions, this version of ProArtisan has few more features to offer than its immediate predecessor, ProArtisan2. That said, ProArtisan has always been rated very highly for its creative features. It undoubtedly scores as a means of originating high-class pixel-based artwork, and its filters and effects go some way to making it an image processing package as well. However, as far as the latter is concerned, other products now emerging (DA Picture, PhotoDesk, PHOTOtouch etc.) and designed specifically to address the needs of image processing per se may more than give ProArtisan a run for its money in this area.

So, if you already have ProArtisan and are upgrading to a Risc PC, you'll already have your own opinions. Upgrading to ProArt24 is not cheap, and it means taking quite a lot on trust, but if ProArt is for you, then get this 24-bit version - Clares says that the full manual and further upgrades will be free to all registered users.

PRODUCT INFO

Product	*ProArtisan*
Supplier	*Clares Micro Supplies* *98 Middlewich Road,* *Northwich,* *Cheshire CW9 7DA.* *tel. 0606 48511*
Prices	*ProArtisan2 £135* *ProArtisan2CD £160* *Upgrade from ProArt2 £29.95* *ProArtisan24 £169.95* *Upgrade from ProArt2/ ProArt2CD £84.98* *All prices include VAT.*

If you are not a previous ProArtisan user, then you will need to assess your needs on a Risc PC carefully. If you want one of the best art generation packages there is for running on a Risc PC, there is little else as yet, and ProArtisan does have a well-deserved reputation. If you are looking more for an image processing package, to manipulate existing images and particularly photographic images (Photo-CD for example), then have a look at the opposition I've already mentioned before making up your mind. However, Clares is a very established company with a proven track record of support and development.

Whatever your needs, with ProArt24, 24-bit colour art has arrived for the Risc PC with a vengeance. The wait has been well worthwhile.

ImageFS

Richard Hallas previews a new approach to foreign image-file translation

If you spend much time importing graphics files created on other machines, you may be tired of using ChangeFSI or Translator to convert them into sprites before you can use them. As well as taking time and being a nuisance, this also requires an intermediate sprite file, which can be an annoying waste of disc space in itself.

ImageFS's options windows

ImageFS promises to solve such problems by allowing you to treat many foreign graphic file formats exactly as though they were plain sprites; so, for example, double-clicking on a TIFF file might load it into Paint, or you could drag a GIF file straight into an Impression frame.

The following file formats were supported in my (pre-release) copy: PCX, BMP, Clear, PBMPlus, Targa, TIFF, GIF, MacPaint, IMG (Atari GEM), ColoRIX and PICT2, with Amiga IFF and Sun rasterfiles on the menu awaiting implementation. ImageFS needs RISC OS 3.10 or above to operate.

USER INTERFACE

As its name implies, ImageFS is a true filing system. Using it is simplicity itself: once installed on the icon bar you can treat all the files listed above exactly as though they were sprites. The original file icon still appears in Filer windows, so you know what kind of image it is; but, by default, double-clicking on the file will load it into Paint as if it were a sprite.

The icon bar application is in fact just a front-end which you can quit, leaving the filing system intact. The front-end allows you to control exactly how ImageFS handles the different filetypes via a control window. Foreign image files are treated in one of three ways: you can ignore them, use them exactly like sprite files, or treat them like directories; and you can set the options for each filetype individually. For maximum simplicity, treating foreign formats like sprite files is most convenient, as you can simply double-click or drag to load them. However, if you try using files in this way with another conversion program such as ChangeFSI, the latter will get confused since the file has already been converted by ImageFS.

In such cases, the 'directory' method is best: double-clicking on a file will open it up like a directory, showing a sprite inside; you can click or drag the sprite files to get at the converted version, but the file itself will be treated as normal by other programs. In fact, certain file formats can contain more than one image per file, and the directory approach will allow you to pick which image you want by selecting the appropriate sprite, although this was not yet implemented in the version of ImageFS which I saw. However, in this 'directory mode', the name of the sprite can be presented in the form of additional information about the file which you would not normally see (e.g. the name of the author, or the resolution and colours).

Various other options can be configured, the most important being the format of sprite produced by the conversion process. With <I>New format<I>, ImageFS will choose the most appropriate format up to 32bpp. <I>Old format<I> limits them to 256 colours (with a choice of dithering between <I>none<I>, <I>simple<I> and <I>Floyd-Steinberg<I>). However, they can then be used by older applications that cannot handle new sprites. I tried converting some 24bpp TIFF files into Floyd-Steinberg-dithered 8bpp sprites using both ImageFS and ChangeFSI, and could detect almost no difference in quality between the two programs' output.

PERFORMANCE

The authors claim that ImageFS is both fast (being written in ARM code) and efficient, using typically

Continued on page 34

in business with Acorn

Alan Wrigley introduces a brand new section in RISC User which is aimed at the business and professional user

Acorn has long flirted with the business community. Back in the distant past, in the days before DOS (yes, there was such a time!), many BBC micros were in use in small (and occasionally not so small) businesses up and down the country. At the time the BBC was state-of-the-art technology, and to capitalise on what was seen as a lucrative business market, Acorn produced the Z80 second processor, which ran the CP/M operating system (a forerunner of DOS) plus a lot of what was then the most common software in use in the business world. In 1985 it announced the new Acorn Business Computer, which was effectively a Risc PC for the eighties - dual processors built in, one of which was a Z80 to run CP/M and open up the world of business - sounds familiar?

Unfortunately for Acorn it was just at this time that the company suffered its financial problems, and worse still, IBM belatedly entered the market with its DOS-based PCs which effectively rendered CP/M obsolete overnight. The Acorn Business Computer was stillborn, Acorn went on to develop the Archimedes, and DOS took over the world.

So what of the future? In the last couple of years Acorn and its band of third-party developers have attempted to address niche markets with some success, and we shall be focussing on some of these areas in this business section in forthcoming issues. Impression Publisher and the Calligraph 1200 dpi direct laser printers have spearheaded the drive towards the professional and semi-professional publishing market; many composers and music publishers are buying Acorn systems purely for the ability to run the award-winning Sibelius application; Eidos used Acorn technology to develop their video editing software; and with full 24-bit colour now available on the Risc PC, and graphics software such as PhotoDesk appearing rapidly (see the review elsewhere in this issue), there will be many opportunities for Acorns to pop up in the world of professional image processing.

Another factor which has not often been mentioned is the growing dissatisfaction in the software industry over the 80-90% monopoly of Microsoft. It is unhealthy for any industry to be so dominated by one player, and I think it can only be to the advantage of companies such as Acorn that people are now beginning to question the wisdom of putting all their software eggs in one basket. I believe the future is much more likely to see the question of compatibility in terms of files and data rather than operating systems.

This has already happened for graphic images, which can be freely exchanged between most computer systems. What we need now is a standard DTP file format that can be read by both Quark Xpress and Impression, an accounts file that can be dropped into Sage or Prophet, and so on. This may provide the best hope for the future for RISC OS software developers.

Those who have used both RISC OS and Windows claim that the Acorn system is more user-friendly, so in a world where OS compatibility becomes less important, Acorn could do much to enhance their chances of survival by ensuring they continue to press home the advantages of their system. And in terms of DOS compatibility where this is seen to be important, Acorn and its dealers must stress that the Risc PC with a second processor is compatible at the hardware level and not just via slow software emulation as is the case with the new PowerMac systems, for instance.

So much for the theory. In practice, it is up to the user to make the most of what Acorn can offer, and the purpose of this new business section in RISC User is to provide a forum for business and professional users to ensure that they are not working in a vacuum. We will aim to provide articles on items of interest to serious users and on specific areas of business and professional use, and hints which are of particular relevance in the business field. We welcome suggestions for articles or topics to be covered, but please contact us first with your ideas before writing articles. We would also welcome information on companies or individuals who are using Acorn machines in a particularly interesting or exciting way. Finally, we hope to act in a modest way as a kind of information exchange for business users, so if you need help in a particular area, we will publish your letters in the hope that others may be able to respond.

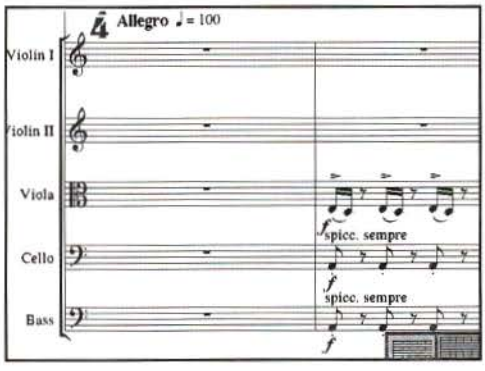
Personally speaking, I have been running a business since 1984 using Acorn computers. I have never once felt the need to buy a PC or even run a DOS program, and I have no qualms about continuing to rely on Acorn for my computing needs for the foreseeable future.

in business with Acorn

The following companies supply software and hardware for the business and professional user.

This is not intended to be an exhaustive list, and we apologise to anyone we have left out.

Computer Concepts are one of the best-known companies in the Acorn market, and have been supplying software, and more recently hardware, since the very early days of the BBC micro. CC were among the first to identify the business potential of the Archimedes, and have produced a steady stream of state-of-the-art software products such as the Impression family of desktop publishers and word processors, and the powerful vector graphics package ArtWorks. Following their takeover of Wild Vision, CC have expanded their range of hardware products which includes the LaserDirect printers, the Scanlight scanner, the Eagle multimedia card, the Hawk video digitiser and the Lark sound card. Sadly the FaxPack fax card is now discontinued, though if you have a pre-Risc PC computer you may be able to pick one up second hand.



Sibelius by Sibelius

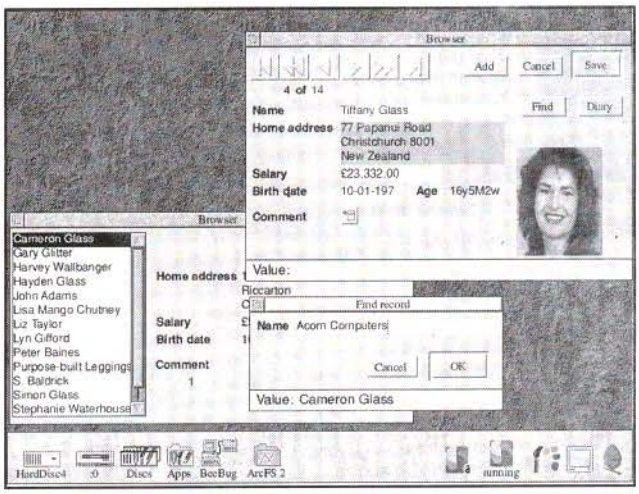
Colton Software are also a long-established company in the Acorn field. Their word processor/spreadsheet Pipedream is one of the most widely-used packages on the Acorn platform. More recently Colton have produced a new generation of software including the word processor Wordz, the spreadsheet Resultz, and also Fireworkz which is an integrated version of the two.

Apricote Studios are known as specialists in the field of accounting software. Prophet is their flagship application, and is used by a great many other software companies in the Acorn market. Personal Accounts, as its name suggests, is for less demanding accounting requirements, though it will be perfectly suitable for many small home-based businesses who are not registered for VAT.

Calligraph have specialised in direct drive laser printers. Their ArcLaser introduced in 1990 was one of the first examples of this technology in the Acorn market, and a steady stream of products since then has culminated in the current range of 1200 dpi printers, including the A4-1200 and the flagship TQ-1200, an A3 printer which has formed the basis for Acorn's push into the professional publishing market.

Computer Concept's Artworks

Along with CC and Colton, Clares is a long-established company that has its roots in the days of the BBC micro. The



Longman Logotron's S-Base

company has a wide range of software, but for business users the most noteworthy item in the catalogue is the spreadsheet Schema 2.

All businesses need to organise themselves efficiently, and to date the only personal organiser of any note on the Acorn platform is Almanac, published by Stallion Software.

Irlam Instruments have gained a reputation for innovative hardware products. The company produced the first colour scanner for the Acorn market, and recently scored another first with its hand-held colour scanner ImageII. Irlam are also at the forefront of multimedia technology with Replay DIY for creating Replay movies, and in the professional field the Moving i-Mage desktop video system is widely used for computerised video presentations.

Longman Logotron are well known as producers of educational software, but the company also have a number of items for the business user, in particular the programmable database S-Base, and the spreadsheet Eureka 2.

Sibelius Software have taken the music publishing business by storm with their Sibelius package. Music publishers and composers are queuing up to buy Acorn systems just so that they can use this software, which has had rave reviews and has been featured in the national press.

The speed and graphics capability of RISC OS make Acorn machines ideally suited for computer-aided design. Among a number of CAD packages on the market is ProcCAD from Minerva, which is used by several well-known large companies.

P.R.E.S. have a range of software which is aimed squarely at the business user. This includes the Enterprise modular business system offering accounts, stock control, mailing, payroll etc., and a project management system called ProjectING.

INFORMATION

Computer Concepts Gaddesden Place Hemel Hempstead Herts HP2 6EX tel. 0442 63933 fax 0442 231632

Colton Software 2 Signet Court Swanns Road Cambridge CB5 8LA tel. 0223 311881 fax 0223 312010

Apricote Studios 2 Purls Bridge Farm Manea Cambridgeshire PE15 0ND tel. 0354 680432

Calligraph 53 Panton Street Cambridge CB2 1HL tel. 0223 461143 fax 0223 316144

Clares Micro Supplies 98 Middlewich Road Rudheath Northwich Cheshire CW9 7DA tel. 0606 48511 fax 0606 48512

Stallion Software Arundel House Arundel Road Camden Bath BA1 5JX tel. 0225 339090 fax 0225333090

Irlam Instruments Brunel Institute of Bioengineering Brunel University Uxbridge Middlesex UB8 3PH tel/fax 0895 811401

Longman Logotron 124 Cambridge Science Park Milton Road Cambridge CB4 4ZS tel. 0223 425558 fax 0223 425349

Sibelius Software 4 Bailey Mews Auckland Road Cambridge CB5 8DR tel. 0223 302765

Minerva Minerva House Baring Crescent Exeter EX1 1TL tel. 0392 437756 fax 0392 421762

P.R.E.S. Ltd PO Box 319 Lightwater Surrey GU18 5PW tel. 0276 472046 fax 0276 451427

RISC Developments Ltd 117 Hatfield Road St Albans AL1 4JS tel. 0727 843600 fax 0727 860263

Last but by no means least, RISC Developments produce a number of packages in the business and professional field. Among these is the desktop publisher Ovation, and the OCR reader Sleuth.

Group Survey - Compression Systems

Richard Hallas performs a comparative test of the various RISC OS data compression utilities

When purchasing a hard disc, so the saying goes, you are usually told to think of the largest capacity you will ever need and then double it. It's a fact of life that you can never have enough storage space, either for physical objects or for computer data. If someone tried to sell you an appliance which claimed to turn your home into a 'Tardis', allowing you to store twice as many objects as there was space in the house to keep them, you would rightly be sceptical. However, in computer terms such claims may be valid, and adverts for utilities which profess to double the storage space on your discs can be very alluring. This survey aims to show the relative merits of the compression systems available for RISC OS machines.

Archimedes compression utilities have come a long way over the last couple of years. They started off by being capable only of compressing files for storage: you could keep files in a compressed form (an archive), but in order to use them you would have to decompress them first. Subsequently, the utilities took the process a stage further by performing the compression and decompression transparently, allowing you to save and load files directly from the archive, and the latest programs can integrate totally with all the other filing systems.

DIFFERENT APPROACHES

There are currently six compression utilities in common use on RISC OS, and they fall conveniently into three pairs in terms of the way they work. Squash and PackDir are of the 'old school', in that they allow you to compress files for storage but do not allow you to run the compressed files directly from the archive. ArcFS and SparkFS create archives which resemble normal directories (although they are in reality single files), and into which you can save and load files as normal. Under RISC OS 3, such archives behave just like any other directory (although their use is a little more complex under RISC OS 2). KleinFS and CFS take a different approach: they duplicate your normal filing system icons on the icon bar, and any file saved into a directory opened from one of these icons will be individually compressed. Viewed in a 'normal' directory, the files have 'squashed' icons, but in a 'compression' directory the file icons appear as normal. The latter four utilities mentioned are all true filing systems, hence the 'FS' suffixes.

L-Z-WHAT?

Although they present themselves in different ways, the RISC OS compression utilities all use the same basic method for data compression: LZW. This algorithm (named after its creators, Lempel, Ziv and Welch) basically works by encoding frequently used sequences of bytes. The number of different sequences that can be encoded depends on the number of bits used for the codes, with greater numbers of bits resulting in better compression but requiring more memory for the compression process. The usual number of bits to be used for LZW compression is 12, but up to 16 is common. All the utilities tested here use 12-bit LZW compression, though some can give up to 16-bit LZW.

SPEED, SECURITY AND SPACE

By their very nature, compressed files are always more susceptible to damage than uncompressed ones. Whilst a single disc error in the middle of a text file may (at its mildest) result in a spelling mistake, a disc error within a compressed file may result in the loss of the whole file. With a system like PackDir or ArcFS, using an archive file which itself contains a directory structure full of files, a single error could potentially result in the loss of all the files in the archive (although the programs employ measures to make this unlikely). There is also a reduction of speed in accessing your files, as all compression systems must take time to compress and decompress the files.

The approach taken by Squash, KleinFS and CFS is to compress files individually within the existing directory structure. This should theoretically be the faster method, and is safer in that a bad disc sector is unlikely to result in the loss of more than one file. However, it is less efficient in terms of disc space, as the directory structure is not compressed. New directories inside an archive are very economical, whereas on a hard disc, new (empty) directories can waste several kilobytes of disc space.

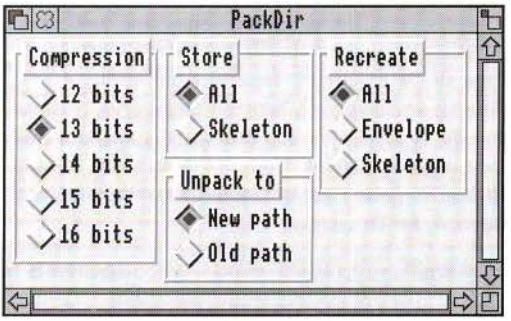
SQUASH (Acorn Computers)

Squash is supplied free with RISC OS 3 upgrades and all new Acorn machines; the part of the utility which does the compression is actually built into the operating system.

Squash is very simple to operate, and creates compressed versions of whatever files you drag to the icon bar. Compressed files must first be decompressed (by double-clicking on them) before they can be used. Rather than creating a single archive containing a selection of files, it compresses each file individually within a standard directory structure instead. As a simple utility, its performance is quick and straightforward, and only the standard 12-bit LZW compression is offered. However, any application can make use of the RISC OS Squash module, which increases its potential usefulness.

PackDir (Freeware by John Kortink)

PackDir was created with the specific purpose of backing up discs in mind, and has been tailored for those needs. It will not accept single files for compression, but instead expects you to give it whole applications or directories, the contents of which it then saves out in a single archive which can also be read by SparkFS.



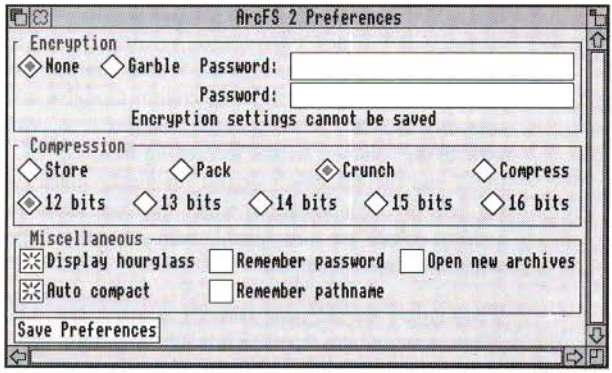
PackDir

PackDir is extremely fast and efficient, and offers 12- to 16-bit LZW compression. It is by far the fastest utility on test here, although as it is not a filing system it does not suffer from the filing system overheads which should be taken into account. Although only really of relevance for backup purposes, it is very easy to use and extremely reliable. It's also very good for cramming lots of software on a floppy disc; and as it's freeware, you can put a copy on the disc with the archives.

ArcFS (Vertical Twist)

ArcFS has been around for some time now, and is well into version 2. It has proved very popular, and is used by several magazines to compress their cover discs. Like PackDir, it offers 12- to 16-bit LZW compression. To use ArcFS, you must drag an archive file (which looks similar to a directory) into a normal directory window. Although this seems like saving a file, it's best to think of it as being like creating a new directory from a filer menu.

The archive behaves in just the same way as a standard directory, and you can save and load files (and create sub-directories) in it. ArcFS's menu very conveniently lists all the archives which are currently in use, and lets you open their root directories or close them. Operation of ArcFS is speedy and convenient. Its worst current drawback is the fact that it uses memory in the Module area for compression. This is rather inefficient, and can lead to wasted memory which cannot always be reclaimed. However, the current version of the software has provision for using a different area of memory and, assuming it is implemented in a future version, this would remove the software's most annoying feature. ArcFS allows you to encode data stored in an archive, so that a password is required to read the data back. This is a good security feature, though it must be used with care; forget the password and the data is lost forever.



ArcFS

A convenient read-only version of ArcFS is supplied, which you can distribute freely to other people along with your archives.

KleinFS (PTW Software)

KleinFS makes use of RISC OS 3's Squash module for its compression system, and so is for RISC OS 3 users only. If you have been using Squash to compress files, then obtaining KleinFS will let you use them just as you would any other files on a disc.

Running KleinFS installs a floppy disc icon on the icon bar, and clicking on this opens a directory onto the floppy disc in drive 0. Saving files into this directory will compress them transparently, and of course retrieving files from it will decompress them as they load. It's just like using the disc as normal, except that files take up less space than they would otherwise. You can easily add a KleinFS icon for every drive you possess, and, usefully, you can give every single drive a custom icon. Another extremely useful feature provided is the facility to 'kill off' the standard Filer icons (you can revive them very easily). Killing the 'duplicate' icons removes the possibility of accidentally opening a standard directory onto a disc when you meant to open a compressed one, and also makes it less likely for you to have two windows open on the same directory, which can be very confusing.

It has to be said that, overall, KleinFS is the slowest system under test here. However, it is extremely easy to use, and far less confusing in operation than its main competitor, CFS, so the advantages of using it could well outweigh the small speed loss for many users. It's also very good value for money, and because it uses the Squash format, a separately-distributable reader application is not needed. KleinFS is also the only utility of its kind which is fully capable of being used over networks.

COMPRESSION - CFS (Computer Concepts)

Compression (CFS) works in a similar way to KleinFS, installing drive icons on the icon bar. Unfortunately these all use exactly the same very dull sprite, so it is difficult to distinguish between them; also, it is not possible to disable the standard drive icons, so it's all too easy to click on the wrong one by accident. This can all lead to quite a lot of confusion for the user, and especially for the novice.

These criticisms apart, though, CFS works extremely well. Aside from PackDir (which is not a true filing system), CFS is the fastest utility on offer (for compression at least), and its adaptive LZW compression gives slightly better than average results.

Its decompression speed is a little slower than I expected, given its very fast compression.

SparkFS (David Pilling)

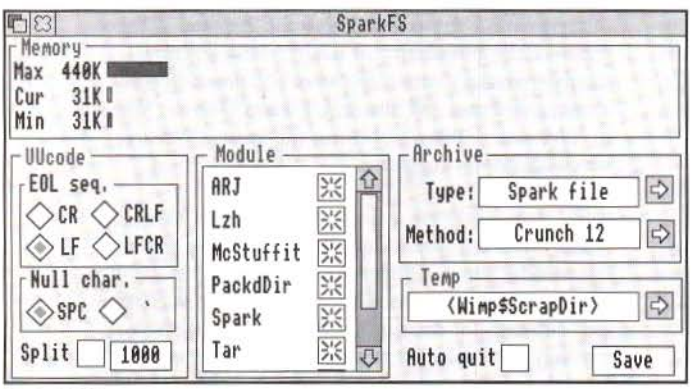
SparkFS is the filing system equivalent of the very first RISC OS compression utility, Spark (which is still supplied on the SparkFS disc). Spark was able to cope with many kinds of archive, and this is equally true of SparkFS, which presents a very impressive array of options. It is entirely modular, so you only need to load the particular compression modules you need to use. If you never need to deal with 'McStuffit' (Macintosh) archives, for example, you can forget about the McStuffit module. This approach enables SparkFS to deal with many kinds of archive without wasting lots of memory; and as new compression systems appear, it will be possible to extend SparkFS with appropriate new modules. Eight basic compression modules are currently provided with SparkFS, enabling it to deal with all the common archive formats on RISC OS, PC, UNIX and the Macintosh. SparkFS is ideally suited to the field of communications where different kinds of archives (which are incompatible with other RISC OS systems) are in common use.

When judged on the same grounds as other RISC OS compression systems, SparkFS is marginally slower than some of its competitors. However, it does not attempt to be the fastest utility; rather, it is the most comprehensive.

Despite its wide range of options, SparkFS is extremely simple to use, and its approach is most similar to ArcFS.

Product	*Inclusive Price*	*Compression Method*
Squash 0.39	Free	LZW 12-bit
PackDir 1.35	Free	LZW 12-bit[1] LZW 16-bit
ArcFS 2.23b	£31.36	LZW 12-bit[1] LZW 16-bit
SparkFS 1.26[2]	£23.96	LZW 12-bit Zip Deflation
KleinFS 1.17	£17.95	LZW 12-bit
CFS 1.17	£45.82	LZW adaptive

Notes
Timings are in seconds
All tests were performed on a machine fitted with a graphics enhancer board, and will correspond to the time taken in mode 0 on a standard machine.



SparkFS

Unusually though, it is able to cross over the boundary into CFS- or Squash-type operation by use of directory-style archives, where files are compressed inside a standard directory structure. Conversion of archives between the two types is straightforward.

Although not the fastest, SparkFS is by far the most comprehensive and flexible system available. It performs all its own memory management efficiently, and is extremely well implemented. Its low price also makes it exceptional value for money.

A small point against SparkFS is that the only decompression utility supplied with it which can be freely distributed with your archives is the ageing SparkPlug. As a read-only version of the original Spark, SparkPlug is a simple decompression utility rather than a read-only filing system, and as such requires you to decompress the files to another disc before you can use them.

TABLE NOTES

The table shows the results of five tests performed on each utility. Each test involved finding the time taken to compress and decompress a file or directory, and the table shows both of these times for each test in addition to the compressed size and percentage of the uncompressed original size. The application used in the test was a heavily customised copy of Impression Style, containing several extra files; the Directory contained twenty Draw, ArtWorks, text and Impression (directory-style) documents; the Sprite was a mode 21 desktop screenshot; the Draw file was a complex piece of monochrome clip-art; and the Text file was an input file for the PMS music typesetting program, resembling programming source code.

12-bit LZW compression was performed by each program in order to give a fair comparison. In addition, however, those programs which had alternative methods on offer (PackDir, ArcFS and SparkFS) were also used in their optimum compression mode to show their theoretical 'best' performances in terms of space saved.

Application (1021K)			*Directory (475K)*			*Sprite file (320K)*			*Draw file (16K)*			*Text file (58K)*		
Comp. Time	*Decomp. Time*	*% Size*	*Comp. Time*	*Decomp. Time*	*% Size*	*Comp. Time*	*Decomp. Time*	*% Size*	*Comp. Time*	*Decomp. Time*	*% Size*	*Comp. Time*	*Decomp. Time*	*% Size*
31.5	17.5	70%	26	8	48%	4.5	1.5	13%	1.5	.75	55%	1.5	1	45%
19.5	18	70%	13	9.5	45%	(2)[3]	(1.5)	(13%)	(1.5)	(.75)	(53%)	(2.5)	(1)	(44%)
40.5	18	69%	20	14	45%	(3)	(1.5)	(12%)	(2)	(1)	(53%)	(2.5)	(1)	(39%)
93	26	71%	91	24	46%	4.75	3	13%	3.25	1.5	55%	3.25	1.75	43%
122	31	69%	115	29	46%	6.5	3.5	11%	5	2	53%	5.75	2.25	39%
84	33	71%	92	32	46%	7.5	4.25	13%	4	1.75	53%	4.75	2.5	44%
213	35	57%	225	30	35%	75	3.5	9%	5.5	1.5	40%	7.75	2	25%
119	43	75%	100	41	48%	15.5	4.5	13%	5.5	1.75	55%	7.25	2.25	45%
40	48.25	71%	33.75	41.5	45%	5.25	3.75	13%	2.5	1.5	51%	3.25	2.5	44%

[1] PackDir and ArcFS can perform 12- to 16-bit compression
[2] SparkFS provides a truly vast array of archive types and compression methods
[3] PackDir will only compress directories and applications; not single files. The single files here were compressed by placing them in individual directories first.

CONCLUSIONS

All the programs on test here work extremely well and do generally live up to the claims of halving the size of your files on average. Obviously some files compress much better than others: fonts hardly compress at all (and attempting to run fonts from a compressed form is inadvisable due to the speed penalties), whereas sprites often compress to an extremely compact size.

Squash, provided with RISC OS 3, has its uses, and is a valuable operating system resource. However, for general archiving, one of the other systems should be considered. PackDir is very fast and efficient for its stated purposes, but is not intended for everyday use.

If you wish to compress all your files without having to think about doing so manually in order to increase the capacity of your hard disc, then your choice is between CFS and KleinFS. Although CFS is very much the faster of the two, it is expensive and rather unfriendly to use. KleinFS is cheap and exceptionally easy to use, and makes the dream of replacing your drive icons with compressing versions a reality.

If you wish to be in full control of what you compress, and not suffer from wasteful disc directory structures, then you must choose between ArcFS or SparkFS. Neither is suitable for compressing a whole hard disc in the way that CFS and KleinFS are, but they are better for general backing up. ArcFS is the faster of the two, and I have personally been using it constantly for the last couple of years. If you only need to access RISC OS archives, then it may be the best choice. However, SparkFS wins over all the others in terms of its sheer range of features. Although slower, it can achieve far better compression than any of the other utilities, and is unique in offering a choice of storage formats. It is also exceptionally good value for money.

Using the Colour Picker

David Spencer shows how your programs can use the new RISC OS 3.5 Colour Picker.

RISC OS 3.5 includes a standard Colour Picker which is used by the likes of Draw to select colours. There are four main reasons why your own Wimp applications should also use this in preference to any other method:

1. It gives a professional feel to an application.
2. It is more economic in terms of code space and development time.
3. It provides a consistent user interface across applications.
4. It will automatically cope with future extra colour models such as a 'Pantone' colour selector.

The purpose of this article is to show just how the Colour Picker can be utilised by programmers, and give a simple example. Whilst the information is relevant to any programming language, the emphasis is towards use with Basic, as this is still the language used by most non-professional developers.

THE BASIC THEORY

The Colour Picker is invoked from a host application by issuing a SYS call to open the picker dialogue box. It then registers itself as a Wimp filter which means that it can intercept Wimp_Poll calls and carry on its business independently of the host until something interesting happens (such as the user picking a colour). When a colour is chosen, the choice is returned to the user via a Wimp message. A second Wimp message is used to request that the host issues a SYS call to close the picker box, for example after the user has clicked Select on OK. It is also possible to monitor colour changes as the user makes them via a third message. The host can choose to receive details of the current colour selection either each time the user finishes dragging one of the bars, or continuously during a drag. Obviously, which method you choose will depend on the application. For example, when setting the background colour of a DTP document frame then you probably don't need to know the colour at all until the user clicks on OK, whilst a drawing package may want to respond as the user plays around with the colour selection.

Despite the fact that the Colour Picker supports several colour models, such as RGB and HSB, the colour returned to the host are always given as RGB values, because these are the most commonly used form within RISC OS. However, to allow the Colour Picker to be re-opened in the exact state it was left in, it also returns a set of parameters that are specific to the colour model in use, and can be treated as a black box by the host. The collection of RGB colour and these additional parameters is termed a 'colour block', and takes the following form:

?block	0
block?1	Red component (0-255)
block?2	Green component (0-255)
block?3	Blue component (0-255)
block!4	Length of rest of block
block!8	Colour model number
block!12	Model specific data
...	

Although the host application is only likely to need the red, green and blue components, it should save the rest of the block for next time the Colour Picker is called. The total length that needs to be saved is given by the value at (block!4) + 8 (this to allow for the first two words). The first time the Colour Picker is called in a given context, it is sufficient simply to pass a starting RGB value, and set the word at block!4 to zero. This will default to the RGB colour model.

DOWN TO WORK

Having described the principles, and the format of colour blocks, it is time to move on to the actual calls.

A Colour Picker dialogue box is opened by the call:

```
SYS "ColourPicker_OpenDialogue",
    flags,block TO handle
```

Currently, *flags* can only be set to 0 to indicate a static dialogue box, or 1 for a transient box, which is closed automatically when OK or

Cancel are clicked on. Typically, transient boxes are used when they form part of a menu tree. The variable *block* points to a parameter block with the following format, detailing the dialogue box:

```
!block    option flags
block!4   pointer to title (0 for default)
block!8   x0
block!12  y0
block!16  x1
block!20  y1
block!24  xscroll
block!28  yscroll
block!32  the colour block starts here
...
```

The option flags should not be confused with the flags already described. If bit 0 of the option flags is set, then the picker box will have a 'none' option, and if bit 1 is set, then this 'none' option will be selected by default. Bits 2 and 3 define how often feedback is passed to the host. If both bits are zero it means that the host is only ever informed when OK is clicked. If bit two is set it will inform the host whenever the colour selection is made, whilst setting bit 3 will inform the host whenever the colour is changed, including in the middle of a drag. All the other option flags must be set to zero.

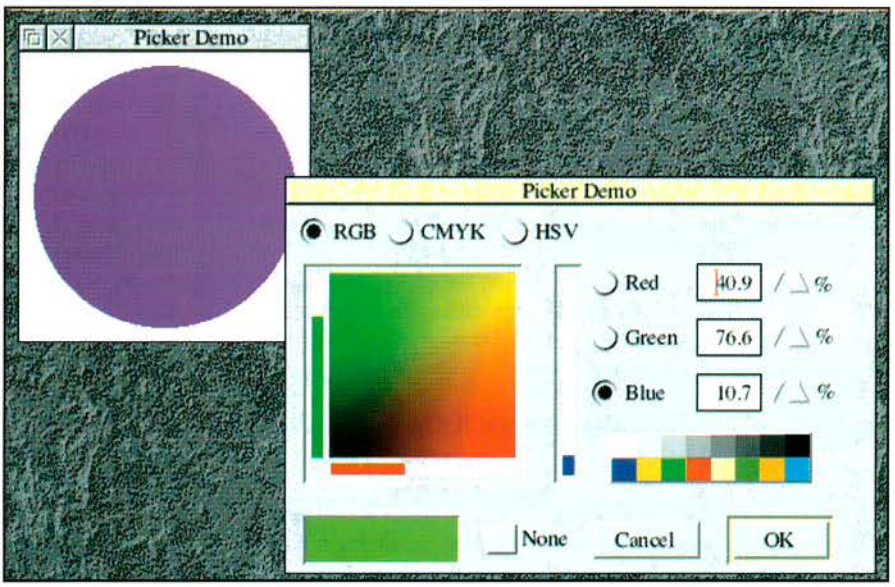
The pointer to the picker box title should be self explanatory - with 0 using the default of 'Colour choice'. The next six parameters determine the position of the picker box in normal Wimp terms, although in practice, x0 and y1 should be set to the coordinate of the top-left corner, y0 should be &80000000, x1 should be &7FFFFFFF, and both *xscroll* and *yscroll* should be 0. This will ensure that the picker box is fully visible. Finally, the block contains the arbitrary length colour block described above.

Once the picker box has been created, a handle is returned to the host. This can be used to identify the picker box in the case of one application allowing several picker boxes to be open at once.

When the user finally chooses a colour by clicking on OK, the host is sent the message number &47700. This is a standard Wimp message block, with the following data:

```
polldata+20   picker box handle
polldata+24   flags
              (bit 0 set if 'none' chosen)
polldata+28   colour block starts here
...
```

As already said, the RGB colour is read from the first word of the colour block (*polldata*+28).



Running the example program.

If the host has opted for continuous updates as the user chooses, these are returned in a similar way to the final choice above, except that the message number is &47701, and the flags are extended so that bit 1 is set if a drag of a colour bar is currently in progress.

The host can at any time find the state of a picker box using the call:

```
SYS "ColourPicker_ReadDialogue",handle,
block
```

which will fill the buffer pointed to by *block* with data in the same format used to create the picker box. However, the colour block returned will be that at the present time, and not when the picker box was created. If *block* is set to zero, then the call instead returns in register R1 the length that the buffer needs to be.

The host can also update the picker box whilst it is open using the call:

```
SYS "ColourPicker_UpdateDialogue",
    changes,handle,block
```

The setting of bits in *changes* determines what attributes are changed:

```
Bit 0  Change presence of 'none' button
Bit 1  Change state of 'none' button
Bit 2  Change continuous report option
Bit 3  Change position
Bit 5  Change title
Bit 6  Change RGB colour
Bit 7  Change whole colour model
```

handle specifies the picker box to alter, and *block* points to a description block as used to create the picker box, except that only the items being changed need to be present.

A picker box can be closed at any time using the call:

```
SYS "ColourPicker_CloseDialogue",0,handle
```

where handle is as returned when the picker box was created. When the user clicks Select on OK or Cancel of a static picker box, the Colour Picker sends the host a message &47702, with polldata+20 containing the picker box handle. The host should then make the above call to close the picker box. Transient picker boxes are closed automatically.

AN EXAMPLE PROGRAM

Listing 1 is a fully self contained example program, from which it should be easy to see how the Colour Picker is used. When run, it opens a fixed size window containing a circle. Clicking anywhere in the window will open the colour picker allowing the colour of the circle to be changed, although any changes are only reflected when you click on 'OK'. If 'None' is selected then an outline circle is shown. The application quits as soon as the main window is closed.

This month's magazine disc contains a slightly modified version of the example program which implements the colour picker as part of a menu structure, and also allows for continuous update of the circle's colour.

```
10 REM > !RunImage
20 REM Version   A 1.0
30 REM Author    David Spencer
40 REM RISC User July 1994
50 REM Program   Subject to Copyright
60 REM           Not Public Domain
70 :
80 DIM taskid% 4:$taskid%="TASK"
90 DIM messages% 12,cblock% 100
100 DIM name% 12:$name%="Picker Demo"
110 colour%=-1:pick%=0:messages%!0=&47
700
120 messages%!4=&47702:messages%!8=0
130 !cblock%=0:cblock%!4=0
140 SYS "Wimp_Initialise",300,!taskid%
,name%,messages%
150 DIM q% 256,buffer% &200:main%=FNcw
indow
160 !q%=main%:SYS "Wimp_OpenWindow",,q
%
170 ONERROR PROCerrorbox:SYS "Wimp_Cre
ateMenu",,-1
180 REPEAT
190   SYS "Wimp_Poll",1,q% TO A%
200   CASE A% OF
210   WHEN 1:PROCredraw_window(!q%)
220   WHEN 2:SYS "Wimp_OpenWindow",,q%
230   WHEN 3:PROCfinish:END
240   WHEN 6:PROCopenpicker(!q%,q%!4)
250   WHEN 17,18:PROCreceive(q%)
260   ENDCASE
270 UNTIL FALSE
280 :
290 DEF PROCopenpicker(x,y)
300 IF pick%=0 THEN
310 IF colour%=-1 !q%=3 ELSE !q%=1
320 q%!4=name%:q%!8=x:q%!12=&80000000
330 q%!16=&7FFFFFFF:q%!20=y:q%!24=0:q%
!28=0
340 FOR F%=0TOcblock%!4+7
350 q%?(32+F%)=cblock%?F%:NEXT
360 SYS "ColourPicker_OpenDialogue",0,
q% TO pick%
370 ENDIF
380 ENDPROC
390 :
400 DEF PROCreceive(q%)
410 CASE q%!16 OF
420   WHEN 0:PROCfinish:END
430   WHEN &47700:PROCchoice(q%)
440   WHEN &47702:SYS "ColourPicker_Cl
oseDialogue",0,q%!20:pick%=0
450 ENDCASE
460 ENDPROC
470 :
480 DEF PROCfinish
490 IF pick% SYS "ColourPicker_CloseDi
alogue",0,pick%
500 SYS "Wimp_CloseDown"
510 ENDPROC
520 :
```

```
  530 DEF PROCchoice(q%)
  540 FOR F%=0TOq%!32+7
  550 cblock%?F%=q%!(28+F%):NEXT
  560 IF (q%!24 AND 1) THEN
  570 colour%=-1
  580 ELSE
  590 colour%=!cblock%
  600 ENDIF
  610 SYS "Wimp_ForceRedraw",main%,0,-40
0,400,0
  620 ENDPROC
  630 :
  640 DEF FNcwindow
  650 q%!4=400:q%!8=400:q%!12=800:q%!16=
800
  660 q%!20=0:q%!24=0:q%!28=-1:q%!32=&87
000002
  670 q%?36=7:q%!37=2:q%!38=7:q%!39=0:q%
!40=0
  680 q%!44=0:q%!48=-400:q%!52=400:q%!56
=0
  690 q%!60=9:q%!64=&3000:q%!68=0:q%!72=
0
  700 $(q%+76)="Picker Demo":q%!88=0
  710 SYS "Wimp_CreateWindow",,q%+4 TO H
%:=H%
  720 :
  730 DEF PROCredraw_window(handle%)
  740 IFhandle%=main% THEN
  750 !q%=handle%
  760 SYS "Wimp_RedrawWindow",,q% TO mor
e%
  770 WHILE more%
  780   x=q%!4+200:y=q%!8+200
  790   IF colour%=-1 THEN
  800   CIRCLE x,y,180
  810   ELSE
  820   GCOL 0,(colour%>>8)AND&FF,(colou
r%>>16)AND&FF,(colour%>>24)AND&FF
  830   CIRCLE FILL x,y,180
  840   ENDIF
  850   SYS "Wimp_GetRectangle",0,q% TO
more%
  860 ENDWHILE
  870 ENDIF
  880 ENDPROC
  890 :
  900 DEF PROCerrorbox
  910 SYS "Wimp_DragBox",,-1
  920 !buffer%=ERR:$(buffer%+4)=REPORT$
  930 SYS "Wimp_ReportError",buffer%,1,n
ame%
  940 ENDPROC
```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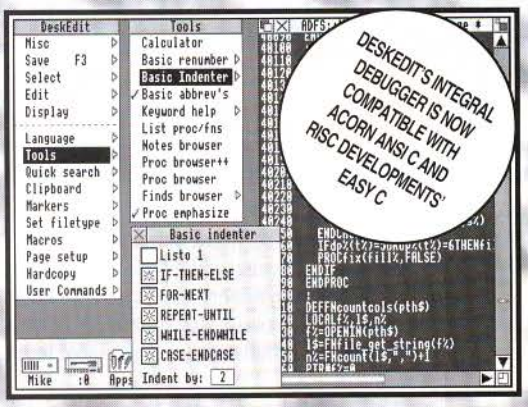

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ArtWorks CD-ROMs

Richard Hallas looks at the latest incarnations of CC's drawing package

Computer Concepts has released two ArtWorks CDs, and this review takes a detailed look at them both. The *ClipArt CD*, the first of the two to be released, has highly varied contents (more than 2000 files) but stops short of including the actual ArtWorks program itself. The *ArtWorks CD*, on the other hand, includes the entire contents of the ClipArt CD, to which is added the actual ArtWorks program (version 1.53) and its associated utilities and fonts. In fact, some of the files on the ClipArt CD have been corrected on the ArtWorks CD, with some minor bugs fixed and demonstrations extended. However, the practical differences between the two discs' common contents are negligible. The full contents are as listed below.

An example from the ClipArt CD

ArtWorks 1.5

Contained only on the ArtWorks CD, this latest version of ArtWorks possesses a number of enhancements, the most important of which is the ability to handle true-colour sprites (with up to 16 million colours). Like the new versions of Impression, ArtWorks 1.5 comes with a loader for TIFF files and is fully compatible with the Graphics Loaders (available separately from Computer Concepts), therefore making it easy to load JPEG, Clear and PhotoCD images directly if you buy the extra pack.

A few other areas of operation have been rationalised by way of some extra user preferences: you can now make all new text appear in black (rather than in the current fill colour), and turn off the previously enforced default of giving all new objects the current attributes (such as fill colour, line thickness), using instead the attributes set up in the default state. All the new preference options improve the ease of use of the package without greatly enhancing its facilities. The print dialogue box also has some new features: user-selectable colour tables and a new page size control for PostScript output.

A significant new preference option is the *Quick Start* facility; previous versions of the program were notoriously slow to load in, and selecting this feature speeds up the process dramatically. On hearing about this new option some time ago, I had assumed that one of the motivations for including it was to increase loading speed from the slow CD-ROM medium, and I was therefore highly surprised to find that it is not possible to load ArtWorks directly from the CD: all that is provided on the CD-ROM is the Installer program, and you must use it to install ArtWorks on your hard disc as before. I was very disappointed by this, having hoped to retrieve a significant amount of hard disc space by deleting my previous copy.

IMPROVED FONTS

Provided only on the ArtWorks CD are the 221 outline fonts. When I bought the original floppy-disc version of ArtWorks, I was rather disappointed by the fonts. The vast majority of them provided only the basic alphanumeric characters, and none of the quality-improvement devices available to Acorn fonts was implemented.

However, I am delighted to say that now, on this CD-ROM version only, the fonts are provided in a vastly superior format to the versions on the floppy discs. They are now in RISC OS 3 format with full kerning data, and full scaffolding and hinting has been applied to improve their quality dramatically. Better still, they also provide very much fuller character sets than before and include the accented characters (although, irritatingly, some useful punctuation marks are still omitted). Whilst still not entirely up to the standard of fully commercial fonts from a dedicated supplier, they are nevertheless transformed in their quality compared with the previous versions.

The addition of kerning data has been extended to the AvantG, BookM and Pembroke families, the

commercial-quality fonts which have been available from Computer Concepts since well before the release of ArtWorks. If you are still using RISC OS 2, the earlier versions of the fonts are still provided on the disc. In fact, all the fonts are provided twice: both in compressed (as per the floppy discs) and ready-to-use formats, which does seem rather excessive.

PORTFOLIO

Common to both CDs is a browser utility called *Portfolio*. This is a handy little program which can be used to record collections of ArtWorks, Sprite or TIFF files. A single window lets you view your clips one by one in thumbnail form, and gives various items of information about each. This utility is doubly useful for hard disc owners, as you can copy it off the CD and use it to build your own clip-art collections: it will let you browse through any directories which are organised in an appropriate form.

Using Portfolio you can only see one image at once, but a separate window lists all the files so you can go to any one quickly, and a search facility allows you to type in a category. This uses an index file, and makes finding all the pictures relating to a particular topic very easy. You can search for an initial topic and then refine your search to look for sub-categories within the current selection. However, I did wish that it was possible to search more than one index at once; currently you have to treat the ArtWorks and sprite files separately.

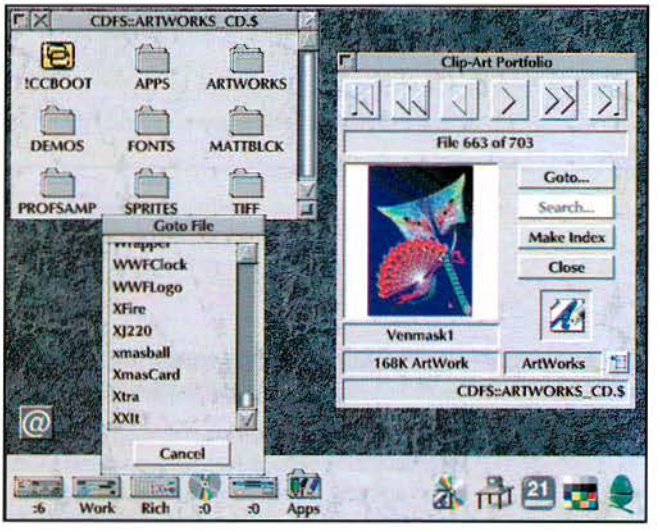
The save icon in the main window is more flexible than most such icons, as it behaves like a filer icon: whilst you can drag it to a directory or application to transfer the appropriate file, you can also double-click on it to launch the appropriate application and load it in automatically.

ArtWorks FILES

These consist of the entries to last year's ArtWorks ClipArt competition. There are 703 files in total, including most of the files supplied on the original ArtWorks discs. They are organised alphabetically and cover a huge range of topics and a wide variety of styles. The quality of the files is very good on the whole, and sometimes exceptional. All the competition-winning entries are of superb quality, as are a few others which were not featured even as runners-up.

As for the potential usefulness of the pictures, there are relatively few which fall into the "gosh, that's just what I've been looking for" category, although many are potentially useful given the right circumstances. There are, for example, several excellent fruit and vegetable renditions which could be used on recipe cards, including a beautiful border design incorporating blackberries and bees. There are also several fancy borders of various types, and other small selections of clips which could be useful to DTP users. Many of the files, though, are purely artistic.

The only real criticism I had of the ArtWorks files is that a number of them require certain fonts to be installed. Of course you can still view the pictures with substituted fonts; and, in some cases, the correct font appears as shapes even though the file asks for the font itself. It would have been nice, though, if these slightly loose ends could have been tidied up (at least to stop the computer bleeping at you).



The *Portfolio* application in use

OTHER RESOURCES

128 full-colour pictures are provided in both Sprite and TIFF format. They are all of excellent, photographic quality with good picture composition. Most of the pictures are of landscapes, plants or animals, with a few cars and other miscellaneous oddities thrown in for good measure, including a small number of computer-generated images. The files are generally large (often 1Mb or more), and some of the pictures exist in big and small versions. The pictures appear to be home-grown: using Portfolio's search facility with the word *Gaddesden* leads to sixteen shots of Gaddesden Place (Computer Concepts' home base)!

The Matt Black directory contains a few (un-indexed) selections from that company's clip-art library: 56 files over 25 directories. The vast majority of these are small, grey-scale images, but they are often potentially useful and of generally good quality. Be aware also that most of these clips

have appeared previously on Archimedes World magazine cover discs.

The *FontView* application shows samples of all 221 ArtWorks fonts, but isn't a great deal of use to anyone who doesn't own ArtWorks (it's provided on both discs). There is also a rolling demonstration of ArtWorks itself. This is nicely presented, though on my machine at least there was a problem which prevented it running correctly.

There is a ColourCard demo, for ColourCard and State Machine graphics card owners, which cycles through a series of impressive full-colour pictures, and an AudioWorks demo which includes sound samples.

CONCLUSIONS

Obviously if you are interested in getting ArtWorks itself, there is no point whatsoever in obtaining the ClipArt CD, as its entire contents are provided on the main ArtWorks disc. If you intend buying ArtWorks as new and have a CD-ROM drive, there is absolutely no doubt that you should buy the CD version rather than the floppy one: you get more for the same price, and it's far more convenient.

The price of upgrading from the floppy version of ArtWorks to the CD version is effectively the same as purchasing the floppy upgrade plus the ClipArt CD (£10+£20), but for this price you get the vastly improved versions of the fonts, which are well worth having.

As for ArtWorks 1.5, I have to say that the large step-up in version number from 1.2 rather overstates the significance of the new features. Whilst the new facilities are certainly to be welcomed, I would have hoped for something more major (including at least some page rulers) by now. uR

PRODUCT INFO

Product	*ArtWorks CD and ClipArt CD*
Supplier	*Computer Concepts Ltd,* *Gaddesden Place,* *Hemel Hempstead,* *Herts HP2 6EX* *Tel. 0442 63933* *Fax 0442 231632*
Price	*ClipArt CD: £19 ex. VAT* *ArtWorks CD (full package): £169 ex. VAT* *ArtWorks CD (as upgrade): £29 ex. VAT* *Upgrade to ArtWorks on floppies: £10 ex. VAT*

ImageFS (continued from page 20)

no more than 20K during conversion. I found all the claims to be perfectly valid; in comparison with other utilities, the speed of conversion was very impressive, and the quality of the converted image was very high. Comparing the quality of conversion of images between ImageFS and ChangeFSI in 256-colour modes, the results were often apparently identical. Occasionally ChangeFSI could produce a marginally better final image, but really the differences were hardly noticeable.

PRODUCT INFO

Product	*ImageFS*
Supplier	*Alternative Publishing,* *Pentagon House,* *Washington Street,* *Glasgow G3 8AZ* *Tel. 041 248 2322*
Price	*£39.95 inc. VAT*
Discounts available to users of other packages	

As for speed, ImageFS consistently performed much better than comparable utilities. For example, it converted in 15 seconds an image which took the Computer Concepts TIFF loader (in Impression) 25 seconds to convert. ChangeFSI took about the same time as the CC loader.

CONCLUSIONS

Occasionally someone writes a utility which instantly becomes indispensable. ImageFS is one such program, and I would consider its purchase essential for anyone who wants to use images from other machine formats. It also opens up the possibility of using CD-ROMs of images designed for other systems, which would otherwise be tedious to convert.

Although I received a pre-release copy, I found the utility to be solid and reliable. A few of the release version's features were yet to be implemented - in particular a super-fast pop-up preview of any image.

Other conversion utilities are not entirely superseded by ImageFS, since they can often provide more options and finer control. Having said that, I found that the results produced by ImageFS were usually excellent, so finer controls would not often be needed. It currently offers a good range of supported image types, but the most glaring current omissions are JPEG and PhotoCD; I hope that these may be added soon.

ImageFS is an excellent idea extremely well implemented. It works a treat, and is very good value for money. uR

Pioneer DRM-604X CD-ROM Changer

Richard Hallas evaluates the quadruple-speed 6-disc CD-ROM drive from Computer Concepts

CD-ROM certainly seems to be the up-and-coming medium for software presentation. Now well-established in the Mac and PC worlds, it appears to be taking off for Acorn users too, with more and better quality titles now appearing.

The main problem with CD-ROM is - apart from its being read-only - the slow speed of accessing data. Therefore, a drive which claims to be four times as fast as normal sounds very attractive. In addition to its high speed, the Pioneer DRM-604X also takes up to six CDs simultaneously in a cartridge.

THE DRIVE

The DRM-604X is a fairly hefty unit: 8x4x14 inches in size and quite weighty too. You can forget about fitting one of these inside a Risc PC! The front panel sports power, disc activity, 'quad-speed' and 'audio disc' indicators in addition to the power and magazine eject switches, a volume knob and a headphone socket (phono sockets are provided at the back). On pressing eject, the disc magazine pops out of the drive with a suddenness that reminded me of Arkwright's cash register in Open All Hours! The magazine itself contains six shelves which swivel out, so designed that you can only open one at once. I had anticipated the changing of discs to be a fiddly process, but not at all - it was barely more trouble than swapping discs in a single-disc drive with a motorised drawer.

IN USE

The drive is a SCSI device and requires CDFS 2.2. Unless you are using a Morley SCSI card, you will also need to load a device driver. In order to make full use of the drive, you must configure six individual CD drives on your icon bar (in other words, you can only use as many discs in the drive as you configure icons for, up to a maximum of six). This does rather clutter up the screen, but is unavoidable. Clicking on a CD icon causes the appropriate disc to be mounted, the drive swapping discs in around eight seconds. You can see which disc is currently mounted by looking at a window in the magazine, but this is slightly confusing as the disc slots are numbered 1 to 6, whereas the drive icons are numbered 0 to 5. I wished that CDFS would display the name of each disc below its icon (as is done for hard drives) rather than just the CD number.

The Pioneer is indeed fast at accessing discs, although still slow by comparison with a decent hard disc, of course. It enabled me to play 25fps Replay films in mode 21 without jerkiness on my ageing A440/1 (fitted with ARM3 and a graphics card), which I can't do with my Cumana 300-series SLCD double-speed drive. I tested its speed against my Cumana by copying a 12Mb file from a CD to my hard disc: the Cumana drive took 66 seconds, whilst the Pioneer took 33; exactly twice the speed, just as claimed.

CONCLUSIONS

There is no doubting that this is a splendid piece of hardware (it's supplied with a sheet of paper detailing seven awards it has won in PC and Mac magazines), and ideal for use on a network. The ability to select from six discs means that it should not be necessary to swap discs all that often. Although the price is rather high there is also a double-speed version, the DRM-602X, at half the price, which represents a very good deal indeed for a school or business establishment. Either version is significantly cheaper than buying six individual drives.

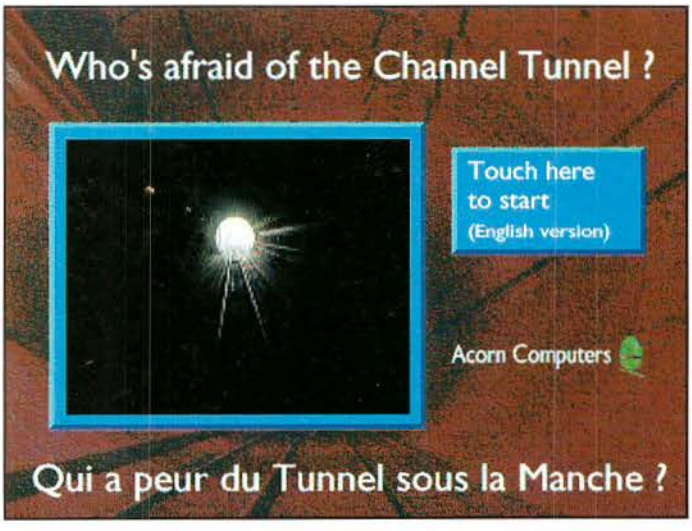
PRODUCT INFO

Product	*Pioneer CD-ROM drives*
Supplier	*Computer Concepts Ltd, Gaddesden Place, Hemel Hempstead, Herts, HP2 6EX*
	Tel. 0442 63933
	Fax 0442 231632
Price	*£999 ex. VAT (DRM-604X)*
	£499 ex. VAT(DRM-602X)

What's Cooking at the Science Museum

Software engineer Dave Patten describes the vital role of Acorns at this important London venue.

The Science Museum is one of London's most popular attractions, with over 1.1 million visitors a year. Most people do not associate the word museum with modern computers, even when the museum in question is the Science Museum. They might expect to find old computers on display or a gallery on the history of computing, and these people would not be disappointed, but we also use modern computers in exhibitions to help us interpret objects and information. We have over 60 computer-based displays at the Science Museum and over 90% of these run on Acorn hardware.


Who's afraid of the Channel Tunnel ?
Touch here to start
(English version)
Acorn Computers
Qui a peur du Tunnel sous la Manche ?

The Channel Tunnel interactive incorporates a Replay movie chip

ACORNS IN THE SCIENCE MUSEUM

The Science Museum has a long history of developing interactive exhibits for use by the public. The Children's Gallery, built in the 1920s, was the first hands-on museum exhibition in the world.

In the early 1980s the Museum decided to start using computers as an interpretive medium alongside video, audio commentaries and tape slide shows. The need to standardise on one computer was appreciated very early on. This allowed us to build up expertise on a particular system as well as making the task of the maintenance team easier, and reducing the amount of spares that we needed to stock. We looked at the computers currently available, and eventually chose the Acorn BBC micro.

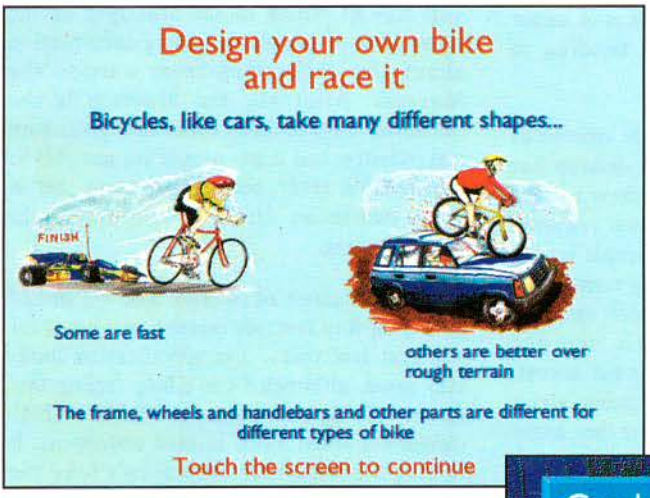
We made this decision for a number of reasons. The Beeb was robust, and had a generous provision of built-in I/O ports, allowing us to control external equipment easily; and we have developed a number of specialised interfaces for it, including a video overlay system. The Beeb also allowed us to store programs on EPROM. This proved to be very important because EPROMs are an extremely reliable storage medium. They are hermetically sealed and have no moving parts, whereas floppy disc drives rotate and are open to any dirt in the atmosphere. As some areas of the Museum can be quite dusty, especially when building work is in progress, nearby floppy discs are easily damaged. I have seen one disc where the magnetic coating had been completely worn away and the disc had transparent tracks.

WHAT ARE WE DOING NOW ?

On May 3rd 1994, we opened a temporary exhibition about the Channel Tunnel, called The Channel Tunnel - the whole story, which will run for 6 months before moving up to the National Railway Museum at York, and hopefully then on to a venue somewhere in Europe. This exhibition contains two computer interactives, one a survey which collects popular views on the Tunnel and the other which deals with popular fears about the Tunnel. This program, which was written for us by Lee Calcraft, also includes a Replay movie clip; the first time we have used this on a gallery. The response to this has been very favourable with someone at the opening asking if the video was coming from a laser disc.

For about two years the Museum has been running a series of exhibitions, sponsored by Nuclear Electric, under the banner of Science Box. These are small temporary exhibitions

that last for three or four months on issues of contemporary science. These exhibitions have covered subjects such as passive smoking, nanotechnology, DNA fingerprinting and the Lotus Sports bike. All of these exhibitions have at least one, often two, computer interactives running on Archimedes computers with touch screens.


Design your own bike and race it
Bicycles, like cars, take many different shapes...
FINISH
Some are fast
others are better over rough terrain
The frame, wheels and handlebars and other parts are different for different types of bike
Touch the screen to continue

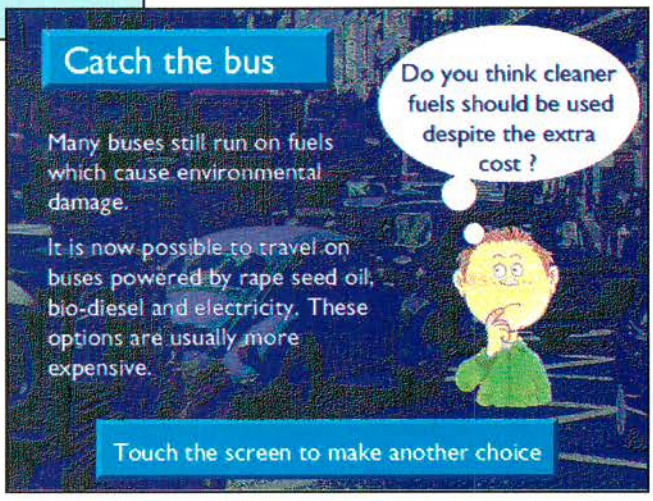
Build yourself a Lotus sports bike

On the 24th May we opened the latest exhibition in our Science Box series. It is called City Limits, and is about the sustainability of cities. It looks at our lives in cities today, and the impacts of urban lifestyles and considers what changes we must all make to ensure the future survival of the city. This exhibition contains four computer based interactives, two of which run on Archimedes computers: one dealing with transport issues and the other with environmental issues including recycling and conservation of resources.

The computer interactives are a highly popular part of every Science Box exhibition. We know this both from surveys carried out by the Museum's Evaluation Unit and also because the computers log how frequently they are used. The computer exhibits are generally used by at least 10,000 people over the twelve week life of the exhibition, and in one case the DNA fingerprinting exhibit was used by over 30,000 people in twelve weeks.

Two of the Science Box series which have previously been on display at the Science Museum, Passive Smoking and the Lotus Sports Bike are now on tour around the UK. Contact the Museum to find out where they are now.

Our next new permanent gallery, called Health Matters, opens in early June, and will contain some very unusual computer displays. Five of these are about the relationship between health and lifestyle. All run on Acorn A5000 machines, and the video output is projected onto screens on the floors and walls. The visitors interact with the displays by putting their hands through holes in the exhibits or by moving their hand about inside a ring. One of the computers weighs you and measures your height while you answer questions. This information is then used to personalise the results from the program.


Catch the bus
Many buses still run on fuels which cause environmental damage.
It is now possible to travel on buses powered by rape seed oil, bio-diesel and electricity. These options are usually more expensive.
Do you think cleaner fuels should be used despite the extra cost ?
Touch the screen to make another choice

A screen from the Transport interactive from the City Limits exhibition

We have also started work on a new Education centre which is due to open in the summer of 1995. I am sure this area will contain many interesting and unusual computer interactives, so watch out for further details which will be released over the next year.

WHERE DO THE PROGRAMS COME FROM ?

Much of the software that we use is written in house. Current authoring packages are not entirely suitable, and our programs are mostly

written in BBC Basic with the occasional bit of assembler. Basic is a much maligned programming language often frowned upon by professional programmers, although less so now Visual Basic is one of Microsoft's preferred development languages. BBC Basic is outstanding, being both structured and exceedingly fast. Moreover, the fact that it is an interpreted rather than a compiled language allows us to see instantly the effects of minor program alterations, without needing to recompile each time.

On the Archimedes, programs are written as applications which run from the desktop but they do not multitask. We need them to take over the whole machine for two reasons. Firstly, non computer literate people would probably be confused or put off by various bits of standard window furniture such as scroll bars etc., and these also detract from the message which we are trying to get across. Secondly we must not allow the public access to the operating system, from where they might start deleting files on the hard disc!

Many exhibits use Ellinor touch screens for user input. This particular device is exceedingly accurate, and allows us to keep keyboards and mice safely hidden away behind the exhibits. Monitors are generally used in mode 28, the standard 256 colour VGA mode. The one snag with this is that the Arc's video RAM limit prevents us from using bank switching to improve the smoothness of animations. Another limitation on our displays is that to avoid wear and tear on our hard discs, we arrange to access the drive just once at power-up, loading everything, including all images and sounds, into memory. This sometimes makes for a tight squeeze, and means that user statistics must be stored on CMOS RAM, rather than on disc. The one exception to this is the Channel Tunnel interactive containing a 20Mbyte Replay movie!

WHAT DOES THE FUTURE HOLD ?

At the moment the Museum displays less than 10% of its collections at any one time. Computerised multimedia catalogues should allow the Museum to give the public easier access to those objects not on display. The Museum is in the process of upgrading its computer database which will in future contain text and images, and hopefully at some time in the future video as well. At present this catalogue is used only internally and by academics as a tool for research, but it is hoped that by adding a user friendly front end it should be possible to give the public access to this information.

This type of system should also open up the possibility of people accessing information about the collections from outside the Museum. After all, the Museum is the custodian of the national collections for science and industry, and many people are not able to visit London easily, so access to some sort of online multimedia database might provide the next best thing.

The recent launch of Acorn's Risc PC should go a long way towards meeting our needs for the next few years. The specification looks very good, although I can't help feeling that Acorn will regret limiting the VRAM to 2Mb (remember when 480K seemed enormous). It is also a shame that they didn't take the opportunity to improve the sound handling capabilities (16 bit audio would have been nice). Apart from these two comments, the hardware looks exciting. Acorn's main problem is that, with some notable exceptions, the software often does not keep up with these hardware developments. We need to see applications with the power and flexibility of Photoshop and multimedia authoring tools like MacroMind Director, which as well as incorporating hyperlinking also has some very powerful animation tools built in. The hardware could certainly cope with programs like these (after all, Macintoshes do), and they would make development of software for use in education and museums much simpler and faster.

CONCLUSION

Next time you are in London why not come and visit the Science Museum, or even better why not make a day of it? With five floors of objects and interactive exhibits to explore it takes a full day. While you are there, think about what's going on behind the scenes and how Acorn machines are helping to make science more accessible. The Science Museum is open from 10am until 6pm Mondays to Saturdays and from 11am until 6pm on Sundays.

Chris Drage and Mark Sealey examine six software titles worthy of your attention, whatever age group you work with or type of learning and teaching style promoted in your school or college

Education: Software round-up

key stage 3 & 4 PARLEZ VOUS FRANÇAIS?

CD Français, produced by the Leeds EdIT Centre with support from the National Council for Educational Technology (NCET), is for use at key stages 3 and 4 with pupils learning French. Based on Tricolore Book 4 (published by Thomas Nelson), the package presents a very wide variety of situations and environments likely to be encountered in France. The level of fluency expected and the grades of difficulties make the package suitable for both beginners and more advanced learners of the language.

The pupils are offered the opportunity to hear spoken French (on the CD-ROM) and increase their facility with the language by completing tasks on screen as a result of what they hear - an obvious, yet reasonably well-executed application of multimedia. Well over fifty such activities are included in the package, which consists of two floppy discs as well as the CD; the application uses Oak's Genesis.

These activities include finding your way to the sites where the tasks take place (having chosen which town to visit), using a none too friendly turn-left/turn-right/straight ahead system - you cannot go backwards. Once you have found your feet there, you are asked to complete a set of tasks in French, such as adding up the cost of a meal or choosing items to cook from a market, putting advertisements together based on radio announcements of the products, or filling in the correct times on an airport departure board.

Icons are used consistently to give instructions and feedback wherever these do not come from the CD. There is also ample opportunity to use the graphics (as Drawfiles) and text (in Edit) away from the computer as reinforcement and revision activities. The idea of hearing the instructions on CD and linking the response directly via the computer is an obvious one that surely must become more common as usage of CDs increases in schools.

Although some teachers will welcome the way in which the pupils are by and large presented with (usually self-contained) tasks to complete, more imaginative schools will feel the lack of a greater degree of open-endedness in CD Français.

Although an instruction sheet sets out clearly how the software is to be installed for your machine and reminds you of the need to have the CD permanently in your drive, if you try to mount (or subsequently dismount) the CD in the conventional way, the message 'Cannot play audio CDs' appears. Nor will either this or the second Genesis application reviewed this month run with the very latest versions of Genesis; this is not too serious, though, provided you do use the Browser etc. that comes with it!

PRODUCT INFO

CD Français (£80.85 ex. VAT) and Goldilocks (£39.95 ex. VAT) are available from Cumana at Pines Trading Estate, Broad St, Guildford GU3 3BH, tel. 0483 503121

key stage 1 & (2) STIRRED BUT NOT SHAKEN

Who's been eating my porridge? Whoever it is, the team responsible for CD Français has produced a CD-ROM of the Goldilocks story with a similar funding arrangement.

Suitable for pupils in key stages 1 and perhaps 2, as well as some of those with special needs, *Goldilocks* has been designed to encourage exploratory learning using language, mathematical and IT skills.

Again, there is an audio CD and a Genesis application on two high density discs. A series of simple screens contains graphics and text. These invite you to click and perform some screen-based task - discovering where the bears are hiding, placing the plates in order of size or assigning a face to a description (of rage or surprise, for instance) when the bears get in to discover the mayhem. There is not usually any indication whether the response is acceptable, but progress is straightforward.

Goldilocks can be used with an overlay keyboard and there is a 'crib' in the small instruction booklet that comes with the CD. There is also a huge selection of A4 sheets to extend and reinforce the material covered in the program.

There is nothing earth-shattering about Goldilocks, but with the arrival of CD-ROMs into primary schools under the DfE scheme, it is timely that robust and appealing material should be produced to introduce teachers and pupils to what can be achieved in a relatively child-centred application such as this.

key stage 1 - 4

RINGING THE CHANGES?

Maths Circus from 4Mation is in parts an inspired piece of software that will keep pupils (and adults) of all ages involved for a long time - and mostly to good purpose. The software consists of a set of 'games' which all follow the circus theme, with clowns, trapezes, seals and tickets etc. Each game can have five levels, though there is some inconsistency throughout the suite as to when these can be set, some requiring you to restart that particular game if you wish to change.

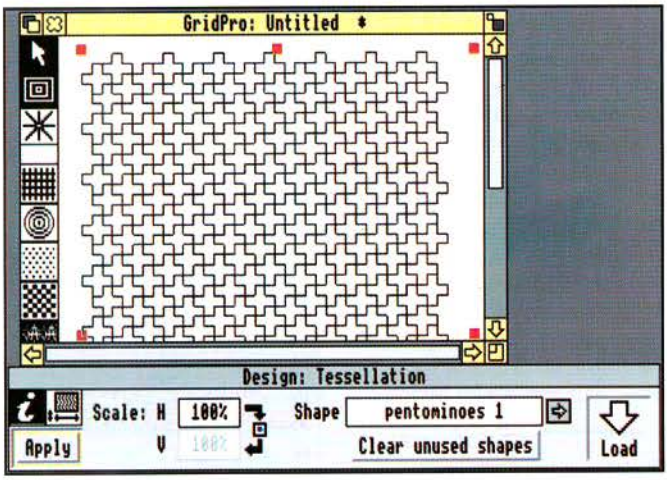
The areas of maths which are practised are what you would expect: number, shape, space, logic, time, grids and co-ordinates, data-logging, angles and measures with a fair amount of problem-solving along the way.

Some of the games are old favourites (pouring liquids from one container to another to get the exact amount of medicine required for the elephant, for example). Others are new, or old concepts newly presented (getting past the traffic lights and across the ring on trapezes). All work well.

The software can be used imaginatively, giving pupils scope for much meaningful work away from the computer and a chance to reason with themselves as to likely solutions and strategies - always to be preferred to merely completing a task in which they have had scant involvement.

The documentation is excellent and the myriad of suggestions of extension work as well as worksheets to supplement the skills taught by the program make this a package that can be recommended for key stages 1 to 4 - particularly at such a reasonable price.

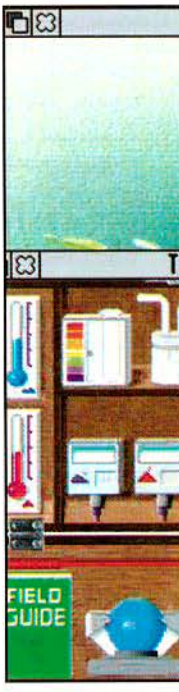
AT THE FRONT OF THE GRID



Creating a tessellated grid

GridPro is another novel and sophisticated utility in a similar vein to the successful Hatchback. This time 4Mation have come up with a comprehensive grid creating/printing program which will find many a use in schools and in the home. Essentially, GridPro allows you to create a wide variety of different sorts of grids and patterns quite simply. Grids can be linear, polar or with logarithmic scales and include dot lattices and tessellated patterns. In fact, virtually any type of grid is possible. Various elements in a grid can have colour added for emphasis or the line thickness altered, and the final creation can be exported into other applications' documents. Grids can vary from the very simple to the extremely complex with no limit on the number of grids which can be created on a single sheet of paper; as the handbook points out, this can range from a diminutive A5 to a huge 12A0!!

GridPro is likely to appeal to primary teachers who wish to create grids and patterns to assist with children's mathematical investigations, and pupils in secondary schools and higher education who require grid sheets tailor-made to suit their specific requirements. So why not purchase commercially printed grid sheets? Well, not only can GridPro assist you in making customised grids, but it will permit them to be printed on any size of paper, in any colour and with specific features selected. Commercially produced grids of this nature are likely to cost an arm and a leg. GridPro is an ideal utility for teachers and older students, both of whom will appreciate its flexibility and versatility in producing a wide range of customised grids and patterns.



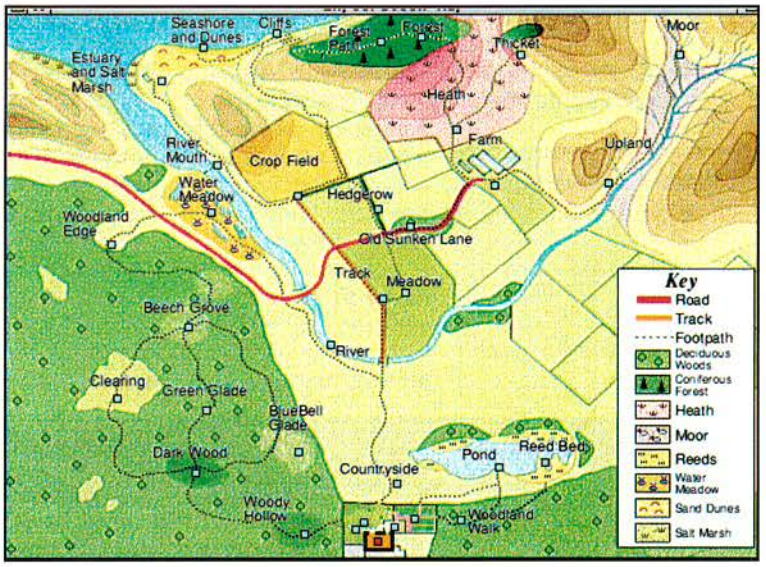
PRODUCT INFO

GridPro (£37.50 ex. VAT or £75 for site licence) and Maths Circus (£27.50 ex. VAT or £55 for site licence) are available from 4Mation Educational Resources, 14 Castle Park Road, Barnstaple, Devon, EX32 8PA, tel. 0271 25353

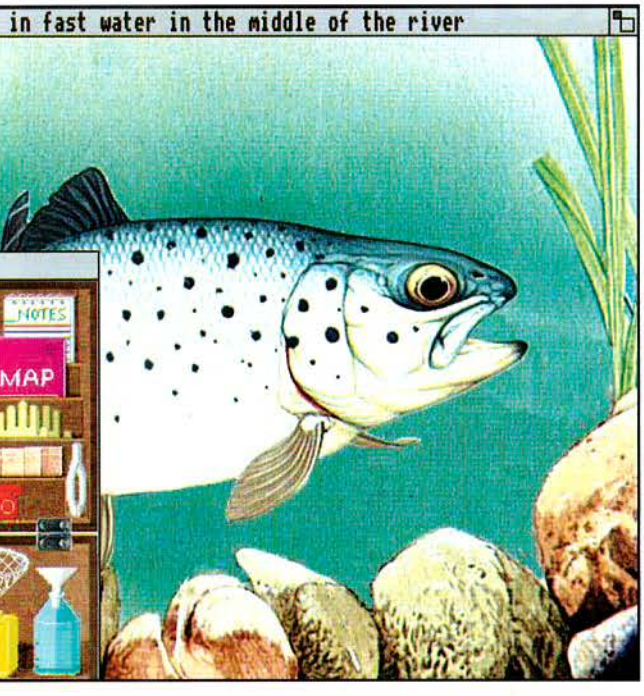
EXPLORING NATURE THE USBORNE WAY

The Usborne Exploring Nature CD-ROM aims to provide learning experiences involving exploring a range of natural habitats to discover hundreds of different species of flora and fauna by looking, thinking and doing. The CD-ROM depicts an area of mixed topography in which native flora and fauna can be found in their natural habitats. The discovery of primary evidence is achieved by the use of a *Naturalist's Toolbox* with which the child can take all manner of measurements of the environment and its inhabitants, even to the extent of 'collecting' specimens, taking 'photographs' and making notes in a 'notebook'.

The package comprises a CD-ROM and an A4 ringbinder containing instructions, ideas, cross curricular links and uses in a classroom situation. The CD is, in essence, a vast collection of visual and textual data which is accessed via a superbly child-oriented front end. You start in the study of a country house. From here clicking on a doorway, window or painting will set you off exploring the countryside. However, inside the room certain 'hot' areas provide access to interactive help, a scrapbook of travels, themes to explore and a word processor for reporting. The countryside can be explored in many ways although initially it is fun to follow the paths and tracks exploring the area. The toolbox is always available, from which all manner of measuring/collecting equipment is accessible. Opening the O.S. map reveals the whole region within which specific locations can be visited. At each location there are hidden hot spots which reveal close-ups of individual species and hidden signposts which lead you on.



Screens from the Exploring Nature CD-ROM



The designers have done an excellent job in creating a colourful and inviting scenario which positively invites exploration. The background information is there in abundance as is the opportunity to export all data to children's own presentations. There is only one major omission: sound. How much better this silent application would be with the addition of bird song, wind, wave and other county sounds. This criticism apart, for either home or school the Usborne Exploring Nature CD-ROM is clearly a winner.

PRODUCT INFO

Usborne Exploring Nature CD-ROM is available from
Hampshire Microtechnology Centre,
Connault Lane, Paulsgrove,
Portsmouth, PO6 4SJ,
tel. 0705 378266.
Price: £125 ex. VAT

WHAT'S IN STORE FOR VERSION 4?

Nstore in its fourth generation has a number of very important additions and improvements which many teachers will appreciate. Those readers familiar with H.S. Software's earlier version of this National Curriculum record keeping program, are well aware of its shortcomings - especially when operating under RISC OS 3. Although the new version is still only RISC OS coexistent, it does now cope better with RISC OS 3; for example, it can now communicate much better with other packages and it loads and quits correctly from the icon bar.

The program has improvements in its content, not least of which being the ability to type in a pupil's first name, surname and gender, and includes a sort routine to deal with each of these. Similarly, Nstore now includes all the statements of attainment for levels 1 to 10 in all relevant subjects, and includes screens for RE and general comments. The program follows Acorn's philosophy of having stand-alone, single-purpose packages and exporting data to appropriate software for laying out and printing. In Nstore's case this includes improved export facilities for text and CSV files which can now be sent to either Impression or Ovation. Nstore also contains a range of print options for setting your own format, headings etc. Any combination of subjects can be printed or exported in any order. Similarly, version 4.0 can import existing version 3.0 files for conversion to the new format although you will need to enter genders before being able to use the file.

Undoubtedly, Nstore 4.0's major improvement is its report writing facility containing a comprehensive bank of comments, all of which can be individually edited, altered or amended. Reports now include additional data in the form of attendance figures, exam (percentage), classwork (percentage) and SATs results for each subject. Nstore 4.0 does take a lot of the pain and labour out of composing those end of term/year reports especially if you keep your classes' data updated at regular intervals. Don't be dissuaded by the looming changes to the National Curriculum either, H.S. Software propose to offer amended versions to Nstore to registered users at nominal cost.

PRODUCT INFO

Nstore is available from
H.S. Software,
56 Hendrefoilan Avenue, Sketty,
Swansea, SA2 9ZZ,
tel. 0792 204519.
Price: £44.95 (£16.95 for upgrade).

If YOU are thinking seriously about

STATISTICS

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1st and 1st Jr have enhanced specifications.

RISC OS 2 and 3 compliant. Structured Menu System. "Spreadsheet" data entry. Simple access to UNMATCHED STATISTICAL FACILITIES. Drawfile output of Graphics. Ultra-easy import and export of CSV files giving smooth data interfaces to other software. Automatic, context sensitive Manual. Mouse driven with optional keyboard shortcuts.

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South Wirral L64 1SD Tel. 051-327 4268

Risc PC Hints and Tips

David Spencer offers another potpourri of RISC OS 3.5 features.

CLAIMING PROCESSOR VECTORS

The new SWI OS_ClaimProcessorVector has been added to allow low-level code to claim the ARM's hardware vectors which are called when interrupts and aborts occur. On entry, R0 contains the vector number:

0	Branch through zero
1	Undefined Instruction
2	SWI executed
3	Prefetch abort
4	Data abort
6	IRQ

Bit 8 of R0 should be set to claim the vector, and clear to release it. For claiming, R1 should be set to the address to call, and for release R2 to the address used when the vector was claimed. The current address is returned in R2 for a claim operation.

This is one of those calls that you should only use if you know exactly what you're doing as RISC OS provides no checking or support on its use!

KILLING SPRITES

The new command:

```
*WimpKillSprite <spritename>
```

will remove the named sprite from the Wimp's RAM sprite pool. This can be particularly useful when an older application has loaded its own copy of one of the window tools, wiping over the newer 3D version.

TILED WINDOWS

Provided that window tiling has been enabled using the !Boot application, the Wimp will replace any window background with a colour of 1 by a pattern formed by tiling a sprite called 'tile_1'. A default sprite is included in the Wimp's pool, but an application can include a different one in its own sprite file, provided the window definition points to the application's sprite area. This means that each application could use a different texture if desired.

DON'T USE VDU

With the ever increasing complexity of the video system, many of the older VDU calls to change colour and the like are now very restrictive in the way they can operate. Acorn's recommendation is that VDU calls are only used for actual printing of characters and cursor positioning, with calls such as SWI OS_Plot and SWI OS_SetColour being used for other graphics operations.

RESIZING ICONS

A new Wimp call is SWI Wimp_ResizeIcon. This allows an existing icon to be resized, and optionally moved. On entry, R0 and R1 contain the window and icon handles respectively, and R2 to R5 contain the new bounding box. The Wimp will coordinate all the necessary redrawing operations automatically.

CHANGING SCREEN MODE

A new call, SWI OS_ScreenMode, handles the changing of screen modes. To change mode, R0 should be set to 0, and R1 either to an old-style mode number, or to a pointer to a mode specifier block (see 'New Modes for Future Machines' in RISC User 7:5).

To read the current mode, issue the call with R0 set to 1. On exit R1 will contain either a mode number or a pointer to a mode specifier block.

HANDLING COLOURS

With the advent of 32-thousand and 16-million colour modes, it is important that programs retain R, G and B values as eight-bit quantities. In the past, many programs have treated them as four-bit values and set the lower nibble to either zero, or the same as the upper nibble.

EXTENDED SysInfo

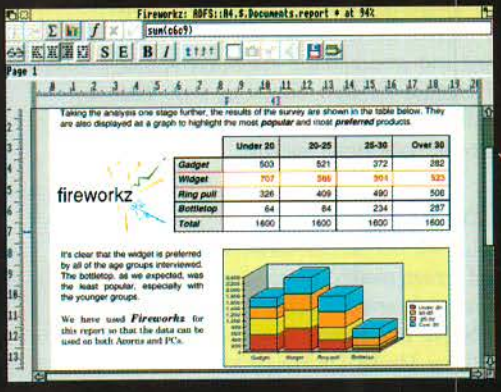
SWI OS_ReadSysInfo with a reason code of 2, which returns details about the computer's hardware has been extended. Now, on exit, bits 16-23 of R0 detail the memory controller present (0 for MEMC, 1 for IOMD), and bits 24-31 the video controller (0 for VIDC1, 1 for VIDC 20). This provides a good way of checking the actual hardware present, rather than just the operating system version.

£149 worth of Fireworkz for £99

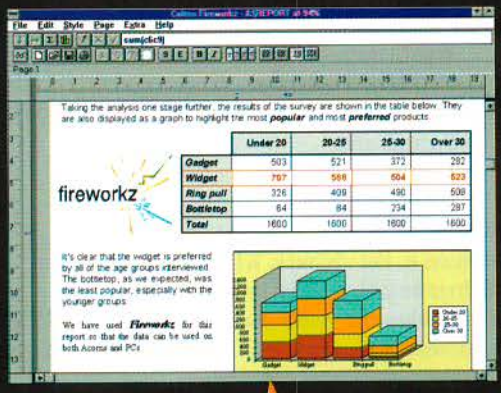
Until September we're doing a very special offer for Fireworkz. Over the summer period we've reduced the price from £149 to £99. You can buy a secondary site licence for £396 instead of £596.

Fireworkz

Our superb integrated program which incorporates the Wordz wordprocessor and Resultz spreadsheet really is easy to use. The wordprocessor and spreadsheet share the same controls so that once you've learned one you know the other. The table editor in the wordprocessor is second to none and you can include spreadsheet calculations inside the table. To make a live graph you just swipe the figures in the table with the mouse and press the graph button. We've never seen editing formulas any simpler either: adding up numbers is just a point and click operation.


Fireworkz: ADFS::HD4.$.Documents.report + at 94%
Page 1
Taking the analysis one stage further, the results of the survey are shown in the table below. They are also displayed as a graph to highlight the most popular and most preferred products.
fireworkz
It's clear that the widget is preferred by all of the age groups interviewed. The bottletop, as we expected, was the least popular, especially with the younger groups.
We have used Fireworkz for this report so that the data can be used on both Acorns and PCs.

	Under 20	20-25	25-30	Over 30
Gadget	503	521	372	282
Widget	707	588	504	523
Ring pull	326	409	490	508
Bottletop	64	84	234	287
Total	1600	1600	1600	1600


File Edit Style Page Extra Help
Taking the analysis one stage further, the results of the survey are shown in the table below. They are also displayed as a graph to highlight the most popular and most preferred products.
fireworkz
It's clear that the widget is preferred by all of the age groups interviewed. The bottletop, as we expected, was the least popular, especially with the younger groups.
We have used Fireworkz for this report so that the data can be used on both Acorns and PCs.

	Under 20	20-25	25-30	Over 30
Gadget	503	521	372	282
Widget	707	588	504	523
Ring pull	326	409	490	508
Bottletop	64	84	234	287
Total	1600	1600	1600	1600

Fireworkz for Windows is now available

We've spent the last few months on the next stage in the Fireworkz project: the Windows version. This is now available, also at the special price of £99. If you already have the RISC OS version, you can add the Windows version for £50. If you have both Acorns and PCs you can now work on your files on either machine. You can even use the same floppy disc. Fireworkz for Windows can load Lotus, Excel and RTF files. Fireworkz is the only choice, if you plan to buy PCs in the future.

Recordz & Fireworkz Pro

Fireworkz Pro is coming later this year. This incorporates Recordz, the next major piece in the jigsaw: it's a fast and friendly database with card layout, searching and sorting. It uses DataPower format files amongst others, shares Fireworkz' wonderful user interface and can exchange data with the spreadsheet.

fireworkz

ClassCardz

In conjunction with Bretton Woods School, we've been developing teaching cards for Wordz and Resultz. These are now available for £20. You get a set of A4 laminated cards which you can photocopy. These take you through the first steps with Wordz and Resultz: creating and editing documents in a wordprocessor and spreadsheet.

They're a must for all teachers.

All prices exclude VAT and delivery.

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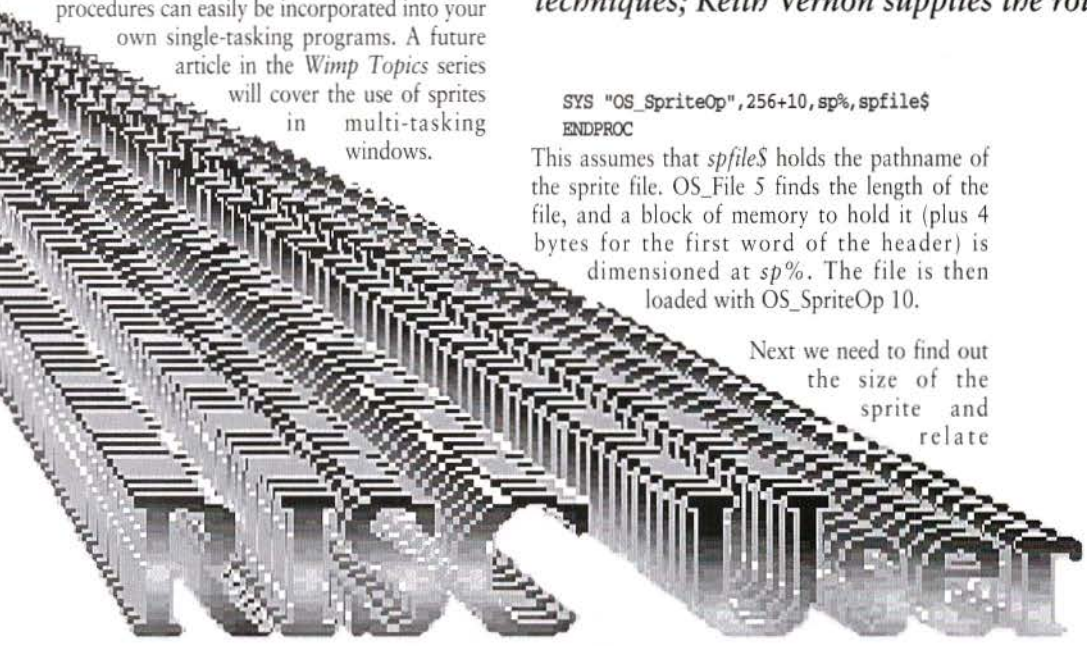
All Things Sprite and Beautiful

Liven up your programs with some exciting sprite displays. Alan Wrigley describes the techniques; Keith Vernon supplies the routines

If your programs need a little extra something to make them look exciting, why not add a touch of gratuitous graphic artistry? Displaying and manipulating sprites is really quite simple, and the routines presented here will enable you to do it in style. In this article we will be describing procedures to plot sprites on the screen in various ways including scaling. A second article in the near future will introduce other transformation processes including rotation and shearing. These procedures can easily be incorporated into your own single-tasking programs. A future article in the *Wimp Topics* series will cover the use of sprites in multi-tasking windows.



The heart of all these routines is the SWI "OS_SpriteOp" (SWI &2E) which can perform a multitude of operations on a chosen sprite, depending on the reason code supplied in R0. The particular reason code we will be making most use of is 56, which plots a sprite according to certain transformation processes specified in the other parameters to the call. We will assume that the sprite to be manipulated is in a user sprite area kept within the program's memory, and so when we refer in the article to OS_SpriteOp 56, we really mean 256+56, since 256 must be added to the reason code to access a user sprite. The call is quite complex and so the descriptions will necessarily be somewhat technical, but even if you don't understand how it works you can still use the procedures in your programs.

First of all we need to set up a sprite area and load the required sprite(s) into it. This is done with a standard procedure as follows:

```
DEF PROCload_sprites(spfile$)
SYS "OS_File",5,spfile$ TO ,,,,size%
DIM sp% size%+4:!sp%=size%+4:sp%!8=16
SYS "OS_SpriteOp",256+10,sp%,spfile$
ENDPROC
```

This assumes that *spfile$* holds the pathname of the sprite file. OS_File 5 finds the length of the file, and a block of memory to hold it (plus 4 bytes for the first word of the header) is dimensioned at *sp%*. The file is then loaded with OS_SpriteOp 10.

Next we need to find out the size of the sprite and relate it to the screen size in the current mode. This is done as follows (assuming that spr$ contains the name of the sprite):

```
DEF PROCread_sprite_info
LOCAL x%,y%
SYS "OS_SpriteOp",256+40,sp%,spr$ TO ,
,,xpix%,ypix%
SYS "OS_ReadModeVariable",-1,4 TO ,,x%
SYS "OS_ReadModeVariable",-1,5 TO ,,y%
spx%=xpix%<<x%:spy%=ypix%<<y%
ENDPROC
```

Here we have used OS_SpriteOp 40 to read the sprite size in pixels, and converted these to OS units (in *spx%* and *spy%*) by reading the xeig and yeig factors for the current mode (these factors indicate how many bits to shift the co-ordinate to the right to get the number of OS units). Note that if you are displaying more than one sprite, this process must be done for each sprite, and separate values of *spx%* and *spy%* held for each.

Figure 1. A simple sprite can make an attractive display

IT'S ALL IN THE PLOT

Once this is done we can think about putting the sprite on the screen. Find a

suitable sprite of a reasonable size - a piece of text as shown in Figure 1 can make an attractive display. The particular one shown here is a mode 15 sprite with a mask, 326x26 pixels in size. To start with, let's simply display the sprite at whatever scale we choose. This can be done with the following procedure:

```
DEF PROCscale(spr$,x%,y%,scx,scy)
dest%!0=x%*256
dest%!4=(y%+spy%*scy)*256
dest%!8=(x%+spx%*scx)*256
dest%!12=(y%+spy%*scy)*256
dest%!16=(x%+spx%*scx)*256
dest%!20=y%*256
dest%!24=x%*256:dest%!28=y%*256
SYS "OS_SpriteOp",256+56,sp%,spr$,1,,8
,dest%
ENDPROC
```

The procedure is called with five parameters, the first of which is the name of the sprite. After this come the x and y co-ordinates of the bottom left-hand corner of the plot position, and finally the x and y scale factors.

At this point some explanation of OS_SpriteOp 56 is required. The parameters we have used here are as follows:

R0 = 56
R1 = pointer to sprite area
R2 = pointer to sprite name
R3 = flags (see text)
R4 = only used if R3 bit 1 is set
R5 = GCOL action (+8 if mask to be used)
R6 = pointer to destination co-ordinate block
R7 = pixel translation table (0 if none)

Some of the registers can hold different parameters depending on the state of the flags in R3. Here we have set bit 0, meaning "treat R6 as a destination co-ordinate block pointer". We will make use of other settings in a subsequent article.

The destination co-ordinate block is 32 bytes long, and contains the co-ordinates of the area in which the sprite will be plotted, in 1/256th OS units. This doesn't have to be a rectangle, though it must be a parallelogram. This enables you to plot the sprite so that it appears slanted. Because of this, four sets of co-ordinates are needed rather than two, and these are placed into the destination block in the following order: top left (x,y), top right (x,y), bottom right (x,y), bottom left (x,y). The co-ordinates required are calculated by multiplying the width or height of the sprite by the appropriate scale factor, and again by 256 to get the correct values in 1/256th OS units as required by the call.

The following program will therefore display a sprite called "MySprite", contained in a file adfs::0.$.Sprites, at OS co-ordinates 100,300, with both its width and height 50% greater than the original:

```
MODE n:CLG
DIM dest% 31
PROCload_sprites("adfs::0.$.Sprites")
spr$="MySprite"
PROCread_sprite_info
PROCscale(spr$,100,300,1.5,1.5)
```

Note that we have not performed any colour translation in this simple example, so the mode number in the first line (the value of n) must have the same number of colours as the sprite.

Try experimenting with this simple example to achieve some different effects. For example, you could alter either or both of the scale factors. If you alter one and not the other, the proportions of the sprite will change. You could also try slanting the text by adding an offset to two of the co-ordinates. For example, the bottom left and bottom right x co-ordinates could be shifted 50 units to the right by altering lines 6 and 8 of PROCscale as follows:

```
dest%!16=(x%+50+spx%*scx)*256
dest%!24=(x%+50)*256:dest%!28=y%*256
```

Note that if the resulting co-ordinates do not form a parallelogram the SWI will generate an error.

Now try calling *PROCscale* in a loop as follows:

```
FOR n=1 TO 60
 PROCscale(spr$,100+6*n,800-6*n,0.2+n/
70,0.2+n/70)
NEXT
```

This plots the sprite repeatedly, each time shifting the starting co-ordinates and the size by a small amount. The result is shown in Figure 1.

FLIPPING SPRITES

Now let's rotate the sprite. To do this we use another couple of reason codes for OS_SpriteOp. Reason code 33 flips a sprite about its x axis, while 47 does the same for the y axis. So the following two procedures will flip the sprite horizontally (*PROCflipx*) or vertically (*PROCflipy*). Note that the alteration is made to the sprite as held in the sprite area, so it will remain flipped whenever it is displayed in future unless you carry out a reverse operation before you want to use it the right way round again.

```
DEF PROCflipx(spr$)
SYS "OS_SpriteOp",256+33,sp%,spr$
ENDPROC

DEF PROCflipy(spr$)
```

```
SYS "OS_SpriteOp",256+47,sp%,spr$
ENDPROC
```

You could now plot three copies of the sprite, with the second flipped vertically and the third flipped on both axes, as follows:

```
PROCscale(spr$,200,600,1.2,1.2)
PROCflipx(spr$)
PROCscale(spr$,200,400,1.2,1.2)
PROCflipy(spr$)
PROCscale(spr$,200,200,1.2,1.2)
```

Don't forget to call *PROCflipx* and *PROCflipy* again afterwards if you want the sprite the right way round in future.

SINE HERE

Finally for this month we will introduce three routines that create patterns from multiple plottings of a sprite. *PROCswirl* creates a whorl, *PROCsinewave* does exactly what it suggests, while *PROCsnake* produces a serpentine object. Figure 2 shows the results.

```
DEF PROCswirl(spr$,xcent%,ycent%,sangl
e%,eangle%,stepang%,swrad%)
IF stepang%=0 ERROR 1,"Angle step size
cannot be zero"
FOR omega%=sangle% TO eangle% STEP ste
pang%
 swrad%-=2
 x%=xcent%+swrad%*COSRADomega%
 y%=ycent%+swrad%*SINRADomega%
 swf=5000/swrad%/swrad%
 PROCscale(spr$,x%,y%,swf,swf)
NEXT
ENDPROC

DEF PROCsinewave(spr$,magnif,ycent%,am
p%,freq,step%)
mag=0.1
FOR sangle%=-180 TO 0 STEP step%
 x%=sangle%*freq+640
 y%=ycent%+amp%*SINRADsangle%
 PROCscale(spr$,x%,y%,mag,mag)
 mag+=magnif
NEXT
FOR sangle%=step% TO 180 STEP step%
 x%=sangle%*freq+640
 y%=ycent%+amp%*SINRADsangle%
 PROCscale(spr$,x%,y%,mag,mag)
 mag-=magnif
NEXT
ENDPROC

DEF PROCsnake(spr$)
x%=100
FOR n%=0 TO 1080 STEP 6
 x%=x%+4
 y%=400+((EXP(n%/600))*50*COSRAD(n%))
 PROCscale(spr$,x%,y%,n%/500,n%/500)
NEXT
ENDPROC
```

PROCswirl requires a number of parameters. After the sprite name, the x and y co-ordinates of the centre of the whorl must be given (*xcent%*, *ycent%*), followed by the start and end angle (*sangle%*, *eangle%*), the angle between each step in the whorl (*stepang%*), and finally the outer radius of the whorl (*swrad%*). The start and end angles are relative to the starting co-ordinate *xcent%+swrad%*, *ycent%*, and the whorl spirals inwards with the sprite plotted every *stepang%* degrees, a little larger each time.

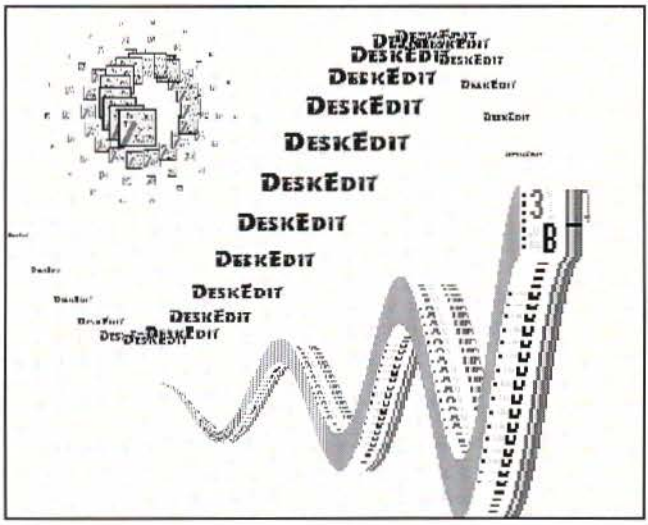


Figure 2. A combination of swirl, sinewave and snake effects

PROCsinewave also has a number of parameters. The sprite name is followed by the magnification increase per step, the vertical position on the screen, the amplitude and frequency of the sinewave, and the step value which determines how many times the sprite is plotted during the sweep of the wave. *PROCsnake* is given in a simplified form, merely requiring the sprite name, leaving you to experiment with the values within the procedure. Some of the values in all the procedures will depend on the size and nature of the sprite - we suggest that you experiment by changing one value at a time to see the result. Some examples of their use are as follows:

```
PROCswirl(spr$,300,700,0,1320,20,200)
PROCsinewave(spr$,0.03,500,300,3,5)
```

All these procedures, as well as some other effects, are included on this month's magazine disc.

Desktop C - the Data Transfer Protocol (Part 2)

After a somewhat lengthy gap, David Spencer concludes his look at file transfers in the Desktop.

If you cast your mind back to the first part of this article (before the Risc PC launch threw a spanner in the scheduling), you will remember that we covered the Data Transfer Protocol for loading and saving data, and transferring data between applications. However, we left a couple of loose ends and these form the topic for this month.

DIRECT RAM TRANSFERS

The method we have explained previously for moving data between applications involves the sender saving the data into a temporary file (usually within !Scrap), and the recipient then loading this file and deleting it. Whilst this does work, it has drawbacks, such as the time taken to save and load the data, and the possibility of there not being enough spare disc space. Indeed, when you consider that the data is most probably being saved from RAM only to be loaded straight back into a different area of RAM, the whole thing seems unnecessarily complex, and indeed it is.

The alternative method that RISC OS supports goes something like this: an application receives a message indicating that the user has dragged a file to it; the application responds by replying that it would like to transfer the file directly through memory; assuming the sender agrees, the application moves the file from the sender's memory to its own in one or more blocks. Obviously this removes all the overheads of using a temporary file.

Before describing the details of this, one subtlety that must be addressed is what happens if either party in the exchange can't handle a direct RAM transfer. This is really quite simple; if the receiving application can't cope, then it simply opts for the temporary file method, and the sender has to go along with it. If on the other hand, the sending application can't handle the transfer, then all it has to do is to ignore the message from the receiver requesting the use of a direct transfer. When the receiver fails to get an acknowledgement to its request, it must default to using the temporary file method.

So much for the background, but how does your poor C code handle all this. Well again, everything is thankfully made much easier by the provision of some handy functions in RISC_OSLib. From the sending application's point of view, remember back to last time when the calls *xfersend()*, *xfersend_pipe()* and *saveas()* were described. Each one of these calls allows a pointer to a function of type *xfer_sendproc* to be passed. At that time we simply set the pointer to zero to disable direct RAM transfers. However, all that is needed to enable them is to set this parameter to point to a function of the following type:

```
BOOL xfersend_sendproc(void *handle, int *maxbuf)
```

Now, if the receiver can handle direct transfers then RISC_OSLib calls this function which must in turn call the function:

```
BOOL xfersend_sendbuf(char *buffer, int size)
```

which will send a block of data to the receiver of length *size* from address buffer. The maximum length that can be sent is the value *maxbuf* passed to *xfersend_sendproc()*, although of course less can be sent if the data is exhausted. In the case where there is more data to send than can be sent, the sender must update its pointer to the next chunk to send, and RISC_OSLib will subsequently call *xfersend_sendproc()* again. If at any point, *xfersend_sendbuf()* returns FALSE, then the *xfersend_sendproc()* function that called it must return FALSE at once. This will abort the transfer and return an error to the sending application.

At the receiver's end, the situation is slightly more complex, but not much. Now, when a *DataSave* message is received (which indicates a transfer from another application), the receiver should call:

```
int xferrecv_checkimport(int *estsize)
```

which checks if a RAM transfer is possible, instead of calling *xferrecv_checkinsert()* as before. If this call returns -1 then it means that no direct transfer is possible, and the receiver should proceed to load the temporary file by calling *xferrecv_checkinsert()* as explained last time. However, if a direct RAM transfer is possible then the filetype is returned, and the integer pointed to by *estsize* is set to the estimated size as given by the sender. In this case the receiver should call:

```
int xferrecv_doimport(char *buf, int size, xferrecv_buffer_processor)
```

which signifies that the sender should transfer *size* bytes of data to the buffer pointed to by *buf*. If, once the buffer is filled, the sender still has more data to send, then RISC_OSLib will call the function passed to the call, which takes the form:

```
BOOL xferrecv_buffer_processor(char **buf, int *size)
```

At this point, the receiver can either empty the buffer and return TRUE, or can allocate a new buffer, and return its details by updating *buf* and *size*. If neither

course of action is possible then it should return FALSE which will result in an error.

When *xferrecv_doimport()* finally returns, it returns either -1 for a failure of the transfer, or the number of actual bytes transferred.

DOUBLE-CLICKING ON FILES

The other area of concern is how to load a file when the user double-clicks on it, rather than dragging it to your application. There are in fact two quite distinct cases here. Firstly, when your application is already running, and secondly when your application must be started up first. We will only deal with the former case here; the latter is actually more straightforward and has been dealt with in RISC User 3:10.

Quite simply, in response to the user double-clicking on a file, the Wimp broadcasts a message of the type *DataOpen*. Although the parameter block returned with this message is slightly different to that from the *DataLoad* message described last time, they both contain the salient information, namely the file name and type, in the same place, and both slot into the Data Transfer Protocol at the same point. Therefore the application can load the file, provided that it wants it, simply by following the procedure described last time of calling *xferrecv_checkinsert()*, loading the file, and finally calling *xferrecv_insertfileok()*.

Incidentally, an application should only load a file in this way if it is the principal owner of the filetype in question. It is wrong for an application to load a file simply because it can cope with it. For example, if you double-click on a sprite file then Paint will load it because it can be considered the principal owner of the sprite filetype. However, Draw can also load sprite files, but they must be dragged in - double-clicking will not make Draw load them.

This month's magazine disc contains the source code of a simple program that allows text files to be loaded, saved and moved between applications, by way of an example of some of the rather involved details introduced in the past two articles. It will also load a text file that the user double-clicks on, provided that the Alt key is held down at the same time. This stealing of text files does of course violate my preachings of the previous paragraph, but it serves as a good example of the loading mechanism.

NEXT TIME

In the next Desktop C we will begin a look at 'Programming according to the RISC OS Style Guide'. See you then. uR

We Test the ARM700

David Spencer tries out the next generation processor for the Risc PC.

After a longer than expected wait, the third part developers who last year purchased Medusa computers - the Risc PC prototype - have finally received ARM 700 cards. We thought we would take this opportunity to look at its performance.

ARM 700 VERSUS 600

The ARM 700 family offers three improvements over the ARM 600 to boost performance. Firstly, the cache size is increased from 4K to 8K, bringing it in line with the Intel 486. This means that fewer external memory accesses are needed. Secondly, the write buffer (see RISC User 5:4) now allows writes to four non-contiguous addresses instead of two, although the size is unchanged at eight words. This should result in less slowing down of the processor during memory writes. Finally, the ARM 700 can be clocked faster. The prototype card runs at 33MHz, as compared to 30MHz for production Risc PC 600s. In the future, faster versions of both processors will appear, though it is likely that the ARM 700 will always have the edge on clock speed.

SO HOW FAST?

The ultimate question then is just how much faster is the ARM 700 over the ARM 600? Well, the following table shows industry standard Dhrystone results for the two, as well as a 25Mhz A5000. The results are a direct measure of general integer performance, with the higher the better.

From this, the ARM 700 delivers some 12.4% more power than the ARM 600. This seems a little disappointing, but remember that this is only one speed test (albeit the most widely used). Real applications that put more demand on cache performance are likely to show a markedly better improvement.

Processor	Dhrystones per second
ARM 3 25MHz	16697
ARM 610 30MHz	32144
ARM 700 33MHz	36140

MORE WAITING I'M AFRAID

It must be stressed that the cards shipped are only prototypes. For those users waiting for ARM 700/710 cards it is likely to be early next year before any product reaches the marketplace. In the meantime, Acorn say that development of the ARM 800 is going better than expected! Watch this space. uR

Good Impressions

Printing numbered tickets is easier than you think; Richard Grant raises the curtain to show you how

I was asked recently to print some tickets for a charity theatre production, one of the specifications being that each ticket should be numbered. I was given the wording and told I had to produce 200 tickets. This prompted me to investigate how Impression could be used to do this, and for what other uses the same techniques could be employed.

There are, as always, several ways to number things sequentially in Impression and its derivatives. Perhaps the easiest way to start with is to work from a Master Page and let the computer handle the numbering for you. So let's assume that you wish to make your tickets A6 size (i.e. one quarter of an A4 sheet) and that you will be using A4 paper or card to print on.

COUNTING BY NUMBERS

Before you start, however, you will need to generate a list of numbers, each one occupying a separate line. Listing 1 will do this for you from Basic and can be run directly from the desktop. It will save a data file called *Numbers* in the currently selected directory, so you should add a pathname to the filename in the fifth line if you want to save it to a particular directory. The program allows you to define both the start and finish numbers for the print run so you don't have to start from 1.

Listing 1

```
CLS
INPUT "Enter Start number: "start%
PRINT
INPUT "Enter End number: "end%
Z%=OPENOUT("Numbers")
FOR X%=start% TO end%
BPUT#Z%,STR$(X%)
NEXT:CLOSE#Z%
```

Open an A4 document and using Sh-Ctrl-A change its format to *A4 Landscape*. Open its Master Page, and on the Master Page create one frame approximately one quarter of the page in size at the top left. This is your ticket master. At this stage you now create your text and incorporate any graphics frames within this frame, but, and this is most important, also create a small frame just large enough to hold the ticket number, somewhere on the ticket.

GROUPING...

Now group together all the frames you have created and copy them to the clipboard. Impression II users should use Ctrl-C, while Style/Publisher users can use the Copy icon on the tool bar. Using Ctrl-V or Insert (or the paste icon for Style/Publisher) paste into place three copies of your ticket so that the A4 sheet is now complete. Close the Master Page and save your work at this stage as it is easy to go wrong at the next!

...AND LINKING

The next stage is important. You need to link together the small ticket number frames on the Master Page, one on each ticket, so that there is a natural text flow from one ticket to the next. So re-open the Master Page and on it click Select on the small frame on the top left ticket, then follow this with an Adjust click on the equivalent frame on the top right ticket. Immediately, before clicking anywhere else, click Select in the same frame (in the top right ticket) and then Adjust in the bottom left ticket small frame. Repeat this action from the third ticket to the last ticket at the bottom right (Figure 1). Close the Master Page and save your work again. If you now click to show the flow (from the icon bar menu in Impression or the *Show Flow* icon in Style/Publisher) you should see a series of black arrows leading from one ticket to the next.

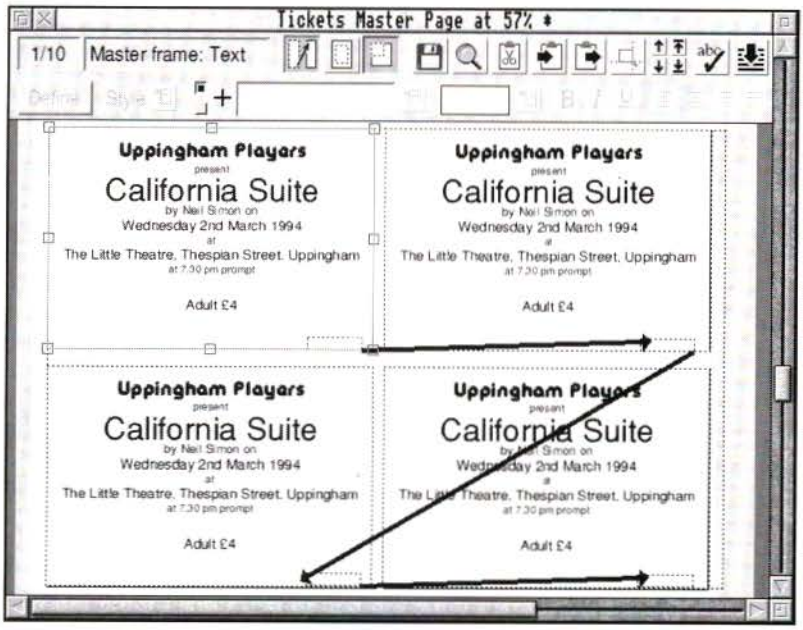
The general idea is that any text that is dropped onto the first small frame will automatically flow across each of these linked frames, and if the frame and text are adjusted so that only one line is capable of being shown in the frame, each new line will fall into the next small frame and create

new pages of tickets automatically. The text you are going to drop in is the *Numbers* file you created before.

So click on the top left small frame to give it the input focus and if all has gone well, when you drop your *Numbers* file onto this frame, as many pages as is required to generate tickets for all your numbers will be created. All that remains is to print them out and cut up the full pages into tickets.

Of course, as I mentioned before, there is always more than one way of doing this. If you want only small runs of numbers, you could simply position the cursor in the first small frame of your working page, type 1 and Return followed by 2 and Return and then 3 etc., each Return forcing the cursor to the next small frame, until all your numbers are in place.

times as you need to generate your tickets. If you have again chosen your second frame size and text size to correspond, then each time you press Return the text will overflow from this frame. Since it is a Master Page frame, another page (or ticket) will automatically be created, generating an apparent page number each time as it does so.



Showing text flow between the frames

USING A DIFFERENT APPROACH

You can, of course, create your tickets one to a page instead of four-up, and there is an alternative method for doing this. Open a document and bring up the Master Pages as before. This time, rather than editing an existing page, open the *New master page* dialogue box using Ctrl-F7, click on the *Custom* button for the page size and edit the fields to match your ticket exactly. Again, on the newly created Master Page, you need to create a small frame for the ticket number but this time you will need the use of a second similar frame to help generate the numbers.

Click on the small frame that you will be using for the numbering and use the *Insert page number* facility to insert the current page number. Compose your ticket on the Master Page and then close it. Now, on the normal document page, position the cursor in the small, empty second frame and press Return as many

THIS MONTH'S HINTLET

Finally here is a little hint: if you are saving your work, it is more economical of disc space to save your original working document as a single page file by itself before you have dropped or created your numbers onto it, and the Numbers file as a separate text file. If you are generating large numbers of tickets, storage space for large numbers of identical pages will be required otherwise. It is easy enough to regenerate the tickets if you need to later.

Such methods of generating identical documents in large numbers can be applied to all sorts of uses. At last, you can design and output fancy raffle tickets for the school or Church bazaar instead of using those boring cloakroom tickets from WH Smith, or produce cocktail party invitations with flair at virtually no cost.

TECHNICAL QUERIES

Alan Wrigley answers your questions on how to find out if a specific task is running, and how to replace the directory folder sprite with your own

Q *Dear Sir*
The DeskTidy *application on the 7:5 disc provided a set of icons for use with directories. Is there a way of replacing my own standard directory icons with customised ones as well?*

Roy Nelson

A The Filer always represents a standard directory using the sprite *directory*, so in order to use individual sprites you have to fool the Filer into thinking that the directory is an application. An application is identified by an exclamation mark at the start of its name, so if for example you have a directory containing DTP resources which you have called *DTP*, then by renaming it *!DTP* you will be able to use an individual sprite. In order to tell the Filer which sprite to use, the directory must contain a sprite file called *!Sprites*, which itself contains a sprite called *!dtp*.

Having done this, however, you are faced with a further problem - you can no longer double-click on the directory to open it since double-clicking on an application normally causes the application to be run rather than the directory to be opened up. If you do this now you will get an error telling you that the !Run file cannot be found. All you need to overcome this is an Obey file called *!Run* inside your directory containing (for RISC OS 3) just one line:

```
Filer_OpenDir <Obey$Dir>
```

RISC OS 2 requires a slightly more complex !Run file, as follows:

```
Set Alias$Temp Filer_OpenDir <Obey$Dir>
Temp
Unset Alias$Temp
```

This will now cause the directory to be opened if you double-click on its icon.

Q *Dear Sir*
Is there a way to find out if a particular task, for example Edit, is currently running?

G H Keathley

A Assuming that you have RISC OS 3, this is quite easy to achieve, using the SWI call "TaskManager_EnumerateTasks". This SWI fills a buffer with information about currently active tasks, including the task handle and the task name. The entry parameters (which I will explain in more detail below) are as follows:

R0 = task number in list
R1 = pointer to word-aligned buffer
R2 = buffer length in bytes

and the exit parameters are:

R0 = next number in list, or <0 if no more
R1 = pointer to first unused word in buffer
R2 = number of unused bytes in buffer

Each entry in the buffer on exit is held in 16 bytes, as follows:

0	task handle
4	pointer to null-terminated task name
8	Wimp slot of task
12	flags

Only the bottom two bits of the flags have any relevance - if bit 0 is set, the task is a module, otherwise it is an application; and if bit 1 is set, the task's slot bar in the *Tasks* window can be dragged.

Since you don't know how many tasks might be running, the easiest way to use the call is to set up a buffer of 16 bytes (which will obviously hold only one entry at a time) and make the call repeatedly, starting with zero in R0 and using the value returned in R0 for the next call, until either R0 is less than zero, or the string pointed to at buffer+4 is the same as the task name you are looking for (the name pointed to will be the one which is quoted in the *Tasks* window, e.g. "DeskEdit" or "ADFS Filer"). If the first of these conditions is true then the task is not currently running. If you are searching for Edit, the code would look something like this:

```
DIM buff% 15:c%=0
REPEAT
SYS "TaskManager_EnumerateTasks",c%,bu
ff%,16 TO c%
a$="":ptr%=buff%!4
REPEAT a$+=CHR$?ptr%:ptr%+=1:UNTIL ?pt
r%<32
UNTIL a$="Edit" OR c%<0
IF a$<>"Edit" ERROR 1,"Edit is not run
ning"
```

You can of course replace the last line with any other action you wish to take, such as setting a flag for example:

```
editrunning%=(a$="Edit")
```

RISC *user* Public Domain Library

Our Public Domain discs contain as near as possible to 800k (and not less than 700k). Each disc includes a 'Read Me' file, and instructions are included with the programs. The discs are offered as seen and are available to RISC User members only for the price of just £1.60 each.

PUBLIC DOMAIN SPECIAL COLLECTION

These discs are still available at the standard price of £1.60 (inc. VAT and p&p). PDX1

PDX1	**Draw Plus**	Extended Draw
	Label	Label printing
PDX2	**AddressD**	Address labels
	AGP	Advanced graph plotter
	Daily	Screen clock
	Draw Cross	Crossword generator
	Memphis	RAM filing system
PDX3	**ArcFS**	Decompression utility
	Risc BBS	Bulletin Board system
	Impulse II	Inter-task communication
PDX4	**ArcFS**	Decompression utility
	PVray	Ray tracing
PDX5	**Hangman**	Classic game
	Interface	Classic Wimp display
	Menus	Wimp menu editor
PDX6	**SuperGram**	Sophisticated anagram finder
PDX7	**365 Days**	Thought of the day
	Dissi	Disassembler
	Eazicopy	Disc copier
	FileTree	Analyses directories
	FileUtils	Icon bar utilities
	GateKeeper	Virus protection
	IconMatch	Pelmanism game
	Interfero	Virus protection
	Links	Software application links
	Manager	Disc indexing
	Menon	Application launcher
	PackDir	File compaction
	QMC	Mode change utility
	Scanner	Virus protection
PDX8	**AIM**	Image processing
PDX9	**Process**	Image processing applications
	Translator	
	Creator	
	GreyEdit	
PDY1	**Powerbase**	Database Management
PDY2	**Out to Lunch**	Screen saver
	KeyWindow	On-screen keystrip
	TemplEd	Template editor
	Menon	Application launcher
	BlibII	Basic V library management
PDY3	**Zap**	Text editor
	ArmSI	Speed indexer
	ArcTools	50 star commands
	Glazier	Template editor
PDY4	**DemoFX**	Graphical effects
	Tertis	Classic game
PDY5	**Dinosaw**	Game
PDY6	**Son of Gyrinus**	Game
PDY7	**Lemings**	Game
PDY8	**Games Collection 1**	BallGame, PV_Life, Racer, ShootEmUp, MineHunt, Billion, PlanetLand, darts, Taipei
PDY9	**Games Collection 2**	Yatzy, Solitaire, NoughtEx, MastMind, Bloxed, CTetris, Merrills

The software on PDX1 to PDX5 was described in RISC User 5:7 (June 1992), PDX6 and PDX7 were covered in RISC User 6:3 (Jan/Feb 1993), PDX8 in RISC User 6:7 (June 1993), PDX9 in RISC User 6:9 (Aug/Sep 1993), PDY1 to PDY4 in RISC User 6:8 (July 1993), and PDY5 to PDY9 in RISC User 7:3.

May 1994
★ NEW ★

PDZ1 - **FontMgr** (font manager), **FYEO** (displayer for GIF and JPEG files), **Mole** (molecular models), **Process** (image processing for 256-colour sprites)

PDZ2 - **BeepError** (assign sounds to error messages), **FontsPlus** (font manager), **MiniHound** (cut down Dictionary and thesaurus based on WordHound), **Saviour** (auto-save facility), **Quitter** and **TaskKill** (both for terminating active tasks)

PDZ3 - **Image** (image processing up to 24-bit resolution), **MultiScrn** (up to ten different Desktop displays), **Palette** (mode changer, Desktop clock, screen saver, etc.)

PDZ4 - **Examine** (magnifier Desktop display), **TemplEd** (template editor), **QMC** (quick mode changer)

PDZ5 - Set of three discs containing GNU **C** and **C++** compilers (available only as a set of three for £4.80 inclusive of VAT, p&p)

PDZ6 - Set of five discs containing the full **WordHound** suite of dictionary plus thesaurus (available only as a set of five discs for £8.00 inclusive of VAT, p&p)

Many of these applications were described in more detail by Simon Burrows in his latest PD survey, Select and Collect, published in RISC User 7:6).

PD LIBRARY CHANGES

The RISC User Public Domain Software Library is being reorganised. A large number of the less popular items will be removed from the library after 31st May 1994, but will still be available at the standard price of £1.60 inclusive until then. The discs affected are:

PD01-PD11	SoundTracker tunes
PD12	Sound and graphics demos
PD13	Projector and six films
PD14	Student register system
PD16	Maestro tunes
PD17	Tricks and novelties
PD18,PD33	Ray tracing
PD21-PD27	Demos
PD28,PD31	Utilities various
PD32	Fortune cookies
PD36,PD37	Demos
PD40	Jukebox and Tracker tunes
PD42	Demos
PD43	Coconiser and tunes
PD44	Fractal generation
PD46,PD47	Jukebox/Tracker tunes
PD48	Bambuzle game demo
PD52	Utilities
PD54,PD55	Utilities

A full list of PD software is available in return for a SAE from RISC Developments, 117 Hatfield Road, St Albans, Herts AL1 4JS

Into the Arc: Peculiar Characters

by Mike Williams

In the June issue of RISC User (7:7) we published a letter about some odd hieroglyphics which a reader had uncovered in a file. We dealt briefly with this subject of alternative characters in a reply to the letter in that issue, but I thought it would be worthwhile to explore this more fully, for the benefit of those who find it all very confusing.

The Archimedes, like virtually all computers, uses a fairly standard 'QWERTYUIOP' keyboard layout, based on the traditional typewriter style. Most readers will likely be aware that this apparently random layout originated at an early stage in the typewriter's history as a means of minimising clashes between adjacent keys. It potentially slows down the rate at which you can plug away at the keyboard; with modern computer keyboards, this consideration is quite irrelevant, but we're stuck with it.

	32	48	64	80	96	112
0	<SP>	0	@	P	`	p
1	!	1	A	Q	a	q
2	"	2	B	R	b	r
3	#	3	C	S	c	s
4	$	4	D	T	d	t
5	%	5	E	U	e	u
6	&	6	F	V	f	v
7	'	7	G	W	g	w
8	(	8	H	X	h	x
9	)	9	I	Y	i	y
10	*	:	J	Z	j	z
11	+	;	K	[	k	{
12	,	<	L	\	l	|
13	-	=	M	]	m	}
14	.	>	N	^	n	~
15	/	?	O	_	o	

Table 1. The ASCII codes for the keyboard characters

The typewriter analogy is useful in one other respect. Press a key on a mechanical, or electric, typewriter and your action directly causes the arm with that letter engraved on it to strike the paper through the ribbon. With a computer the processes of typing in characters, and of subsequently printing them are totally separated. Thus each letter or other character typed at the keyboard has to be stored in the computer's memory (or in a file on disc). This is accomplished by assigning to each character a code number in the range 0-255, the maximum range possible in the eight bits available. This number is called an ASCII (American Standard Code for Information Interchange) code.

The standard keyboard characters use codes in the range 32 to 127 inclusive. 'Space' is always 32, followed by various punctuation characters. The digits '0' to '9' have codes in the range 48 to 57. The upper case alphabet runs from 65 through to 90, and the lower case alphabet from 97 through to 122. Some of the earlier RISC OS User Guides provided appropriate tables as part of the appendices, but Acorn has dropped these tables from the RISC OS 3 editions (but see Table 1). To find the ASCII code of any character add together the number at the head of its column, and the number against its row. If you wondered what has happened to the character with code 127, this doesn't print; it corresponds to the Delete key.

That leaves two gaps in the overall sequence from 0 to 255. The characters with codes from 0 to 31 inclusive are traditionally referred to as 'control codes'. Such codes do not have a printed equivalent, but usually correspond to some kind of action. For example, the Return key generates a code of 13. So when you are typing in text, every time you press Return the code of 13 is stored in the computer's memory. Whenever the computer encounters a code of 13 in any text, it performs a carriage return function. Another example is the Tab key which generates a code of 9. However, the action performed by the computer when it encounters a code of 9 depends on the application you are running - a word processor or DTP package will often allow you, the user, to determine where tab positions are to be located.

For convenience the control keys are often represented as shown in Table 2. You will see from this table that the code of 13, which results from pressing the Return key, also corresponds to Ctrl-M. If you type Ctrl-M (hold down the 'Ctrl' key and press the 'M') at any point in a text file, that also produces the effect of a Return key. You might like to see if you can work out the effect of the other control key combinations, but play safe, and make sure you have nothing visible which hasn't been already saved if it is at all important.

TOP-BIT-SET CHARACTERS

That still leaves half the available ASCII codes unaccounted for, those with codes from 128 to 255. These characters are sometimes referred to

as 'Top-Bit-Set' characters because the code for each is 128 plus some other value (and in binary 128 is the top 'bit').

Despite the fact that there are no corresponding keys on the keyboard, most of these codes do relate to printable characters. So how do you access them? Well there are a number of different ways of doing this. If you want to experiment, just try opening an Edit window, or open a window for your usual word processor or DTP package.

One way, if you know the ASCII code of a character, is to hold down either of the two Alt keys (on either side of the space bar), and enter the ASCII code on the numeric keypad, releasing the Alt key at the end. For example, Alt-176 entered in this way will give you a 'degree' sign. This is all very well, but often you won't remember what the code is or have a reference handy.

Another approach is to use the Chars application provided by Acorn. In RISC OS 3 this is one of the applications accessible from the icon bar (with RISC OS 2 it was supplied only on one of the two Apps discs). Click on the Apps icon on the icon bar, and then double-click on !Chars. This will immediately open a window on the screen showing all 256 characters in eight rows of thirty-two characters (see Figure 1). If you want to locate a corresponding ASCII code think of the columns as being numbered from 0 to 15 (left to right) and the rows numbered 0, 32, 64, 96, 128, 160, 192, 224 (top to bottom). The control codes, with ASCII codes 0 to 31, are shown in the top row as white on black.

However, Chars has further uses. Not only does it show you the complete character set, but if you click over any character with the Select button, that character will be entered at the current position of the caret, and you don't have to remember any codes at all.

There is another feature which can be quite useful with Chars. If you click with the Menu button while the pointer is over the Chars window, a menu will appear showing a list of all the fonts currently known to your system. By default, you will see that the System Font is selected, but if you choose any other font, then the characters will be displayed in that font instead. That can be very useful with fonts like Dingbats, for example, where the characters are special symbols bearing no relationship to the normal letters of the alphabet.

0	Ctrl-@	8	Ctrl-H	16	Ctrl-P	24 Ctrl-X
1	Ctrl-A	9	Ctrl-I	17	Ctrl-Q	25 Ctrl-Y
2	Ctrl-B	10	Ctrl-J	18	Ctrl-R	26 Ctrl-Z
3	Ctrl-C	11	Ctrl-K	19	Ctrl-S	27 Ctrl-[
4	Ctrl-D	12	Ctrl-L	20	Ctrl-T	28 Ctrl-\
5	Ctrl-E	13	Ctrl-M	21	Ctrl-U	29 Ctrl-]
6	Ctrl-F	14	Ctrl-N	22	Ctrl-V	30 Ctrl-^
7	Ctrl-G	15	Ctrl-O	23	Ctrl-W	31 Ctrl- (*)

* Code 31 corresponds to <Control><Space>

Table 2. Traditional representation of ASCII codes 0 to 31

Another point to note is that some outline fonts do not implement a complete character set. This is particularly true of a good few PD fonts, but may also apply for particularly fancy fonts where it is not appropriate to represent some of the more unusual characters in the chosen style.

The Chars application in use

Some individual applications may also make provision for accessing certain of the non-keyboard characters, by changing the functions of otherwise seldom used keys or by defining new key combinations. For example, there are French and German versions of Longman Logotron's Pendown which allow accents to be selected directly from the keyboard. Another way to achieve the same result, but one which will work with any application, is to use the *Country command. Press F12 to exit from the desktop, then enter this command followed by choice of country, and press Return twice. Thus:

```
*Country Germany
```

will reconfigure your keyboard to a standard German layout. Beware though, as foreign keyboard layouts not only provide for appropriate accents, but may also change the positions of other characters on the keyboard to suit the frequency of their use in that country (in German, the 'Y' and 'Z' keys are swapped). However, a detailed examination of *Country and associated commands plus alternative alphabets is something we must leave for another time.

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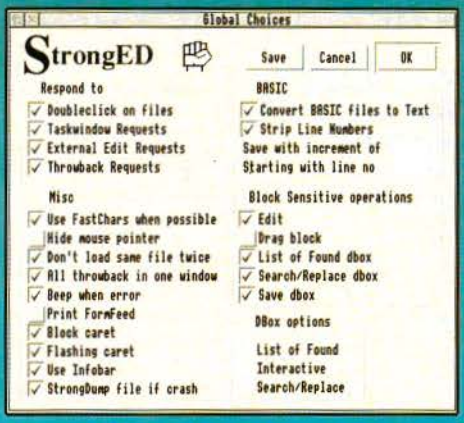

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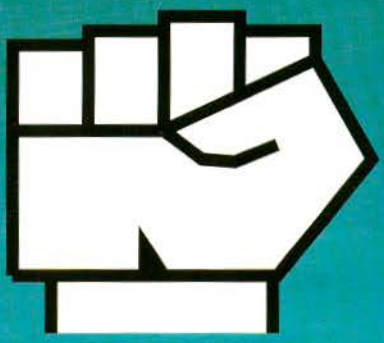

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CFS#adfs::IDEDisc4.$.HOME.MoreFeatures
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(40,4) Insert Nearest B DefaultMod ww 132 LF

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NEW FONTS FOR OLD

Danny Kilgariff

How about a whole new selection of typefaces like those shown in the illustration, using only the fonts you already have plus a small RISC User application called *Streetmap*? The application was supplied originally on the 5:8 magazine disc and is included again on this month's disc.

Achieving the effect is really quite simple. Open a Draw document, select the text option and type in the required text. Now select the resulting text object and using the Style submenu, choose the required font. Drag the object out to a suitable largish size using the lower ear on the dotted box, then click on the bottom item in the Font size submenu in order to set the correct aspect ratio of the characters. Now choose the Convert to path option from the Select submenu. Go to the Style submenu and set the line colour to black (you won't see any change in the text at this point), and the fill colour to white. You should now have an outline of the text, at which point you should save the file.

Now load Streetmap, set the road width to 3mm, and drag your saved Draw file into its window. The conversion will be made instantly and you can now save the output file. Double-click on this to load it into Draw, and your new typeface will be revealed in all its glory.

You may find that in order to achieve the exact effect you require, you need to play around with the size of text in the original Draw file, and also the road width in Streetmap.

TASK WINDOW IDIOSYNCRACIES

Lee Calcraft

Using the Task window provided by Edit on RISC OS 3 (including RISC OS 3.5), you can make use of function keys F1-F9. For example, if you type the following into a task window:

```
*Key1 "Key one defined"
```

then subsequently pressing F1 at any time will cause this text to appear in the task window, providing it has the input focus. But you cannot use F0 (the Print key) or keys F10 and F11.

However, if F10 is defined, it can be activated by pressing the Tab key, while F11 will be entered by pressing the End key. Most odd!

NB. As technophiles will know, you can add the two characters "|M" to a function key string to make it do a Carriage Return, and so actually execute the command all by itself.

RISC OS 3 FILER SELECTIONS

Tony Shew

With RISC OS 3, groups of files can be selected from the Filer window by dragging a box around them. First place the pointer on an unused part of the window then drag over the whole selection with Select held down. This is useful in a number of situations, including when using the *Count* option from the Filer submenu to find out the size of a selection of files. Adjust dragging can also be used to add further groups to the original selection made with Select.

HELP WITH ABSOLUTE FILES

G.N.Steeper

Some applications written in Basic, for example Alarm on Acorn's application disc, have their !RunImage files saved as an Absolute filetype. These programs can be accessed as follows: first go to the Command line by pressing F12, then enter

```
Run <pathname>
```

where <pathname> is the full pathname of the application, e.g. *adfs::0.$.!Alarm*. You will return to the desktop with the application installed on the icon bar. Now choose *Quit* from the application's memory, and you will be back at the * prompt. Enter Basic by typing *BASIC, then type OLD. You can now LIST the program.

SHRINKING HOTKEYS

Ken Cowap

Many prospective users of RISC User's very useful *Shrink* utility (7:5) will need to change the *hotkeys* codes if the originals (Ctrl-Tab & Ctrl-Shift-Tab) clash with other applications (in my case Clares' Plot and RISC Developments' Ovation and DeskEdit). Unfortunately the application on the magazine disc uses very different !RunImage code from that in the magazine; most significantly the instructions related to hotkey codes are not relevant. To alter these codes in the disc version, amend the hex values in line 3380 & 3390 to those for the keys of your choice, e.g. for Ctrl-Print and Ctrl-Shift-Print:

```
3380 key1%=&1A0
3390 key2%=&1B0
```

Finding the codes for your chosen hotkeys is easiest using Kell Gatherer's neat application *KeyTest* (RISC User 4:7) which includes F-key codes, unlike the method described in the Shrink article. To restore all shrunk windows so that all title bars remain visible in a tidy stack, amend the !RunImage file as follows:

```
3640 FOR i%=windlimit% TO 0 STEP -1
```

DOS FILENAMES WITH '/'

Nathan Micholey

It is possible to create a file on a DOS disc whose name contains more than one '/' character. These are translated by DOSFS into '.' characters, only one of which is legal in a DOS filename. The resulting file cannot therefore be read on PCs or the Archimedes, though other machines that attempt to read DOS discs might be able to do so. The file cannot be deleted either, so the disc must be reformatted in order to lose it. Particular care must be taken when copying files, as incorrect filenames can pass through unnoticed.

SpyGlass UPDATE

N.W.James

I have from time to time found the *Spyglass* program (RISC User 4:6) useful. I recently wanted to extend it in a small way to include information on existing tasks. Under RISC OS 3.10, this is relatively straightforward, and now means I can start SpyGlass while the target application is already running. First of all change the following two lines from the magazine listing:

```
150 tasks=0:PROCinittasks:quit=FALSE:bstart=-1
520 WHILE b?off%>32
```

Now swap the position of lines 2010 and 2020. Finally add the following lines at the end of the program:

```
3000 DEF PROCinittasks
3010 LOCAL t%,l%,i%,a%
3020 REPEAT
3030 SYS
"TaskManager_EnumerateTasks",t%,buffer%,bsiz
e% TO t%,l%
3040 i%=buffer%
3050 WHILE (i%<l%)
3060 block!4=i%!0:block!24=i%!8
3070 a%=i%!4:A$=""
3080 WHILE (?a%>32)
3090 A$+=CHR$(?a%):a%+=1
3100 ENDWHILE
3110 $(block+28)=A$
3120 IF ((i%!12 AND 1)=0)
PROCnewtask(block)
3130 i%+=16
3140 ENDWHILE
3150 UNTIL (t%<0)
3160 ENDPROC
```

SUNTAN PROTECTION FOR MICE?

Nathan Micholey

Mice exposed to bright sunlight can become sticky (particularly those of Logitech manufacture). This is because the light can penetrate the mouse's casing and interfere with the optical tracking system. This can easily be cured by moving the mouse to a shaded area or placing your hand on the mouse so that the case joins and the bottom edges of the mouse are cast in shadow, or using some other object to keep the light off the mouse.

HIDDEN PRINTER HIDE IN DeskEdit

Lee Calcraft

DeskEdit's *Printer hide* character, which can be used to prevent selected lines of a text file from being sent to the printer, is normally generated by pressing Ctrl-£.

This does not work on the Risc PC, which uses a different keyboard layout. To generate the *Hide* character on a Risc PC, hold down the Escape key and press the key immediately below it. This fix also works on the A4 portable, which uses a similar keyboard layout.

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The scanned image in the input window is converted to ASCII and displayed in the output window from where it is saved. A 'reject' character is for any unrecognised characters. Sleut fully multitasking allowing you to corr mistakes in the converted text while it still converting the remainder. As you text, Sleuth will 'zoom in' on the appropriate part of the original image that you can easily identify mistakes. S cannot convert columns of text automatically, but allows a zone to be created around each column for conversion separately.

Equipment required

You will require a scanner that outp high quality monochrome sprites. All scanners currently available for Acorn systems are suitable, but for best result your scanner should have a resolution 300 dpi or greater. Sleuth now support Twain which allows images to scanne directly. Drivers are available separatel a number of popular scanners. Please phone for details.

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To upgrade from earlier versions of Sleuth, please return your original disc payment of £5 + £0.85 carriage +VAT.

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RISC developments

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WRITE -- BACK

ON ENTRY

Those earlier magazines of yours are absolute gems. I ask in all humility if you have ever thought of sorting them all out into various topics and re-issuing them in the form of booklets which I am sure would be very popular. I seem to spend an extraordinary amount of time searching for information through various books and magazines often unsuccessfully. Because they were written so long ago it is sometimes difficult to judge whether the methods and information you gave then have been overtaken by the rapid advance in technology (those VDU commands for example).

My main interest is animation, and it was in an effort to get to terms with user sprites that I got involved in the first place with assembly language. I found a couple of articles on user sprites and several on assembly language programming in your magazine most helpful. All the same a favourite ending is "For more information consult the Programmer's Reference Manual".

Well I have inherited a pretty ancient copy of this hallowed manual true, but so far have had no incentive whatever to update it. Just about any topic I try to consult it on starts off "On entry R0=0" or 1 or 2 or whatever. Total defeat.

What in heaven's name is R0? And what does it mean by "On entry" let alone by "On exit"? And how do I get it to equal 0 or whatever? Try as I might nowhere can I find an explanation of this mysterious command.

You might ask how I got involved in assembly language if I don't understand this basic concept, and my answer can be that it only illustrates the enormous and growing gap between those who can and those who can't. I have a copy of Mike Ginns book Archimedes Assembly Language which is excellent as far as later chapters go. I can AND and EOR and Two's Complement with the best of you, and I know all about condition codes and branching with links etc. and can even write simple programs of my own, but every time I think I understand the first couple of chapters, I only need to pick up the Programmer's Reference Manual to find I don't.

Thelma Webb

Much of what was published in earlier issues of RISC User is still as valid now as when it was first published. However, volume 1 was published before the release of RISC OS, and in that respect (but that only) these early issues are less useful. Acorn has always put considerable emphasis on upward compatibility, and this is still as true today with the new Risc PC range.

References to R0, R1 and the like are to the registers in the ARM processor. In Basic, references to these locations are an intrinsic part of SYS calls (the SWI call being the direct equivalent in assembler). As an example, the following statement will result in the value of 65 being placed in R0 when the SYS call is made:

```
SYS "OS_WriteC",65
```

While there are few books on programming the Archimedes, a recent one is First Steps in Programming Acorn RISC OS Computers by Martyn Fox, published by Sigma Press at £14.95, and this has a chapter on SWI calls and assembly language. The book Wimp Programming for All by Lee Calcraft and Alan Wrigley published by RISC Developments at £12.95 also contains much useful and relevant information on SWI calls from a Basic programmer's point of view, though the emphasis is on writing Wimp programs in general rather than on graphics or animation.

ARM POWERED

Despite two excellent articles by David Spencer (RISC User 5:4 and 7:3) on the ARM600, ARM700 and beyond, it is still not clear to me what their connection, if any, is with Apple Computer Inc and the new PowerPC chips.

Apple are shareholders in ARM Ltd and there have been various hints that Apple's Newton is powered by an ARM6 derivative. Contrary to this, Apple's new PowerPC 601 RISC 32/64 bit transitional chip is said to be the product of Apple, Motorola and IBM, with no mention of any British contribution. Both Apple and IBM intend to produce computers based on the Motorola PowerPC 600 series, presently ending with the PowerPC 620, a true 64 bit version of the 601; with a 700 series in the very distant future.

Meanwhile Acorn is reported to be bypassing the 600 series and

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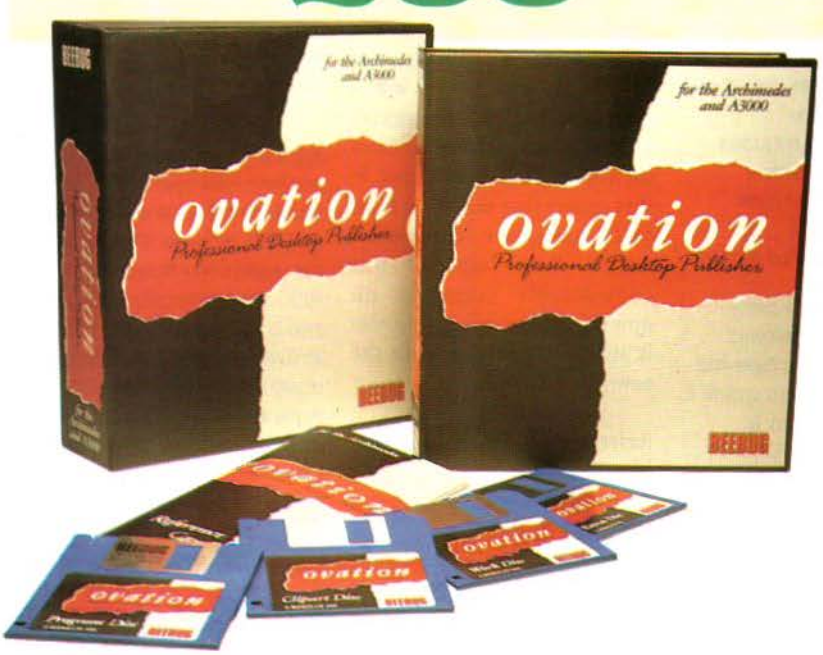

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RISC developments

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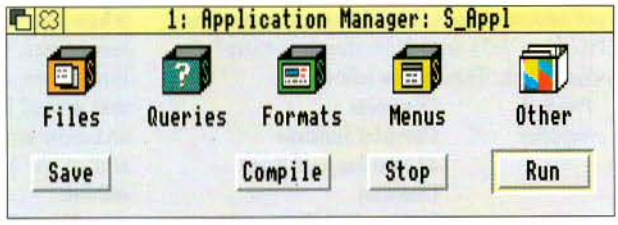

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- The complete source to a powerful multimedia application.

concentrating on the ARM700. Yet David Spencer concludes his article with "The ARM7 series is really only a modest progression from the ARM6 family of devices". From the little information I have seen, Apple and IBM's transitional 601 chip, with its 32K cache and integral FPU, appears more powerful than the ARM700, not to mention the 64-bit 604 and 620 chips now being tested. Is this the case, or am I missing something? Is there any connection between the ARM600 and the PowerPC 600 series. Whatever the answers, the future certainly looks very bright for RISC computing; let's hope that Acorn, who pioneered RISC technology, do not miss the boat.

Peter Ghiringhelli

First of all there is no direct connection between the ARM processor and the PowerPC chip, apart from the fact that both designs are based on the RISC concept (Reduced Instruction Set Computer) which Acorn has championed with its Archimedes range. Secondly, it is true that the Newton uses an ARM6 derivative processor, essentially the same as used by Acorn in its new Risc PC.

As far as ARM processor development is concerned, Acorn says that it has been able to achieve much higher performance, more quickly and more cost effectively than anticipated, and hence the launch of the Risc PC based on the ARM600 processor.

When comparing the relative merits of ARM and PowerPC chips, it is essential to take into account the whole environment in which each chip operates. I am sure that Acorn will claim that its ARM based Risc PCs are more than a match for Power PC based systems, and there is every prospect that a Risc PC could run with a PowerPC co-processor, while the reverse is certainly not true. That stems from the overall Risc PC concept.

PIN BOARD

MAC-IN-DOS

With reference to the article on pages 57-58 of RISC User 7:5 (The PC Emulator Survival Guide) about MAC-IN-DOS, I've just downloaded the HENSA index for micros/ibmpc/dos and unfortunately MAC-IN-DOS has been removed - a pity as it looks to be a useful program. Further it now appears that HENSA can be accessed direct on 0524 843878 using a scrolling terminal set to 8N1 at speeds up to 2400.

Gareth Elderkin

If readers know of any other source for MAC-IN-DOS, perhaps they would let us know so that we can publicise the information on the RISC User Pinboard.

Points Arising.....

In our review of the *Observess* expert system shell (RISC User 7:7) we inadvertently omitted the product details. These are as follows:

Product	*Observess*
Supplier	*Cherisha Software*
	51 Swallowfield Road
	Charlton
	London SE7 7NT
	Tel. 0956 389500
Price	*£20 (no VAT)*
	(Site licence £60)

We apologise for the omission.

Version 2.00 of Observess should be available by the time you read this.

AUTOSTEREOGRAMS - RISC USER 7:7

Unfortunately the gremlins crept into the listing accompanying this article. Everything was correct when the article left us on its way to the imagesetter, but somehow the formatting of the listing went awry in the process. The result was that several lines have gaps in the wrong places, and more seriously, 5 lines went missing from the end of the program. The missing lines are as follows:

```
300 OSCLI("SetType "+outfile$+" FF9")
310 END
320 DEF FNget:ptr%+=1:=?ptr%
330 DEF FN3D
340 IF flag%=0 D%=FNget:flag%=1:=base-
(D%AND&0F)
350 flag%=0:=base-(D%AND&F0)/16
```

You should be able to work out how the lines which were printed should read, but if not we can supply a photocopy of the complete listing - just contact Publications Department if you want one.

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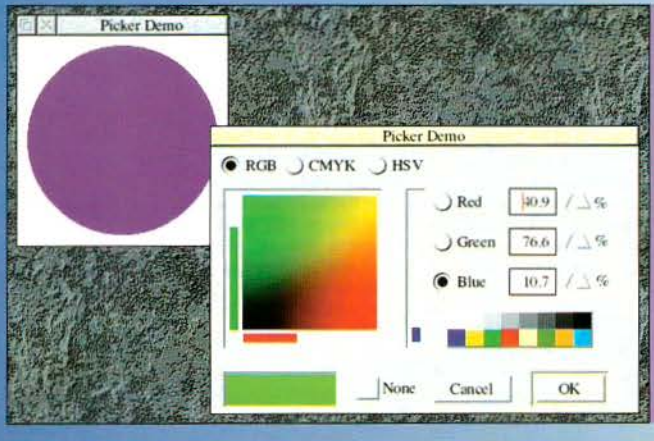
RISC user disc

July 1994

Sprite Tricks

Liven up your programs with a touch of gratuitous graphic artistry! Our article on page 45 describes the techniques, and the *Sprite Tricks* application presented here demonstrates the results. With a little effort you can build on the examples given and add colour and excitement to your own programs.



Colour Picker

Acorn's Colour Picker, as supplied with the Risc PC, is designed to enable any program to choose a colour from the 16 million or so available. A standard interface is provided by means of which your own programs can open the Colour Picker window and then receive information on the colour chosen by the user. The *CPicker* program presented here demonstrates the techniques involved. Running the program opens a window containing a circle. By using the Colour Picker, the colour of the circle can be changed dynamically as the user experiments with the selection. Full details on the process are given in the accompanying magazine article (page 28).

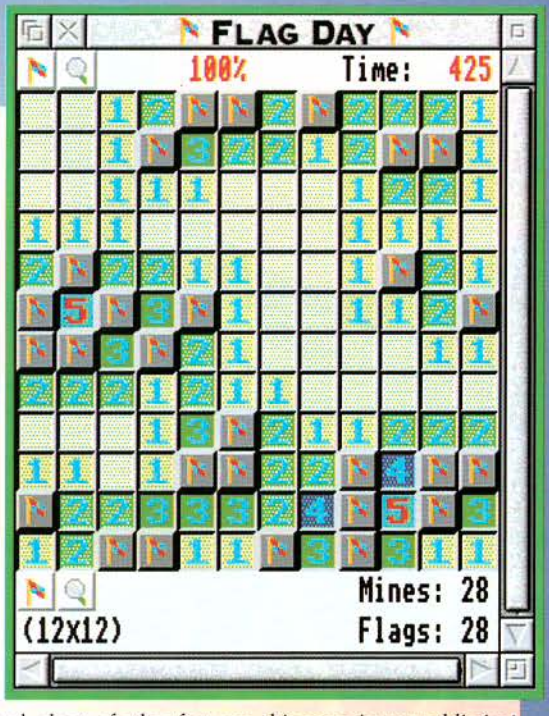
CopyMusic

A feature provided in score editors such as Rhapsody, but missing from Acorn's Maestro, is the ability to copy part of a score. This can make life very tedious if your musical masterpiece has parts which are repeated. Now you can save time by using *CopyMusic*, which refreshes the parts of Maestro that other editors have already reached! Just run it alongside Maestro and it allows you to copy any part of the score and append it to the end. Also included with the application are two Maestro files - the Black and White Rag and the Blue Danube waltz.

Packed with useful applications, the disc costs just £4.75 inc. VAT. Please add £1 p&p.

Streetmap

First published in RISC User 5:8 to aid the process of producing street maps using Draw, this application has now found a new lease of life as a creator of fancy fonts! Our *Hints & Tips* pages give you all the details (page 58).

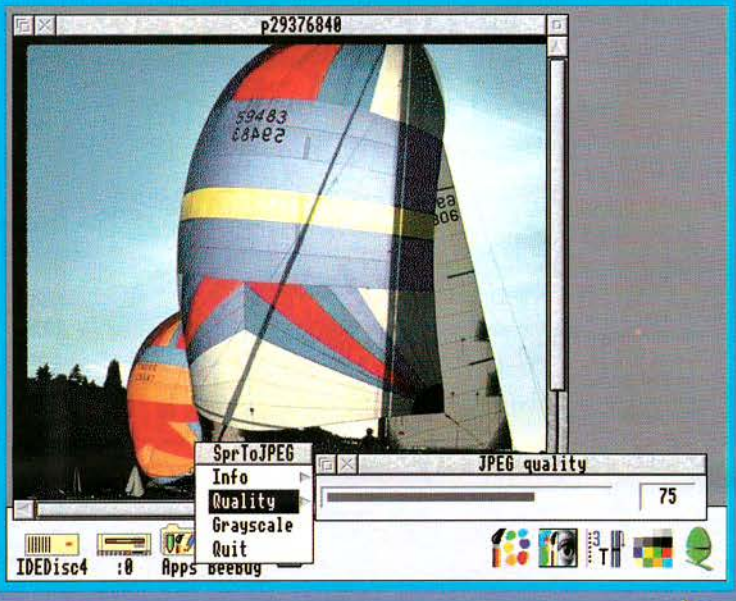


Flag Day

As you pick your way gingerly across the minefield, the sweat pours off your brow as you take the step that might prove to be your last. Suddenly - kerboom! - it *was* your last! Yes, it's that perennial favourite Minesweeper, brought bang up to date in this super RISC OS implementation, *Flag Day*. With a configurable board size up to 99x99 squares and a host of other features, this game is *very* addictive!

SprToJPEG

JPEG has come of age on Acorn computers, particularly with the colour capabilities of the Risc PC. JPEG is an industry-standard method of compressing photographic images, and most of the newer image processing packages can import JPEG files directly. JPEG helps to keep the size of image files to manageable proportions. The *SprToJPEG* application allows you to convert any RISC OS sprite (including new-format ones) into a JPEG file, which can then be exported more easily on a floppy disc to another computer or another system altogether.



Continued on page 71

VOLUME 1 ISSUE 1 JULY/AUGUST 1

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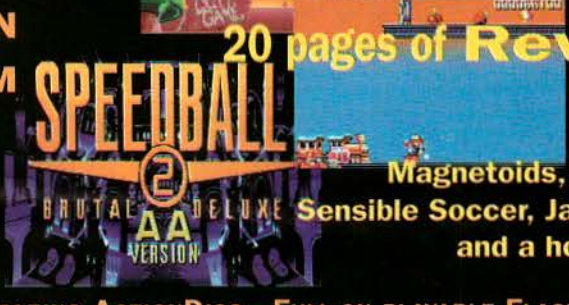


Includin
Digge
Magnetoids, Speedball
Sensible Soccer, James Pond
and a host of othe

ON THIS MONTH'S AMAZING ACTIONDISC - FULL-ON PLAYABLE FLASHBACK DEMO
PLUS ACORN ACTION BACKDROP AND MUCH, MUCH MORE!

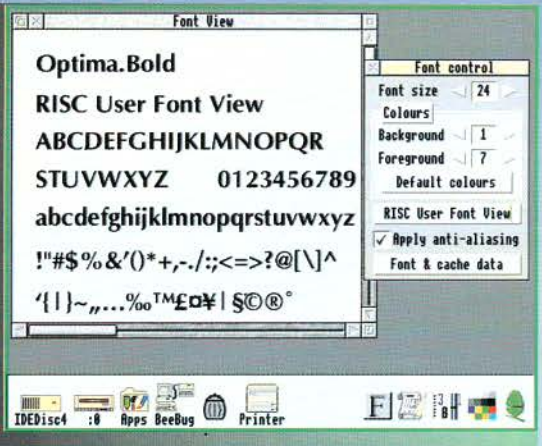
RISC disc user

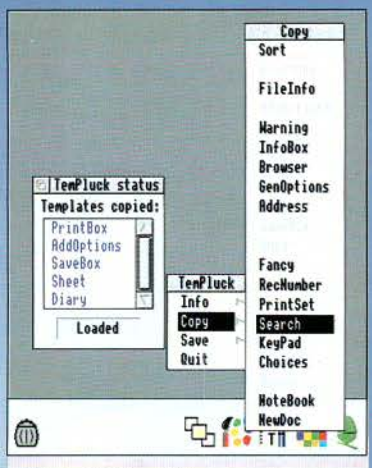
July 1994

Continued from page 69

Font View

Fonts, fonts and more fonts... the trouble is, we have so many nowadays that we can't remember what they all look like. Here's the solution - *Font View*. It allows you to view any font on your system quickly and easily. You can choose what text to display (how about "The quick brown fox.."?), the font size and the foreground and background colours, giving you an instant display of how the font will look when used in anger (or even in Ovation).





TemPluck

Do you find it annoying when you can't easily extract a single template from a template file? You're in good company - most programmers do! *TemPluck* provides the perfect solution - just drag the template file to its icon, choose which templates you want and save them in a separate file. You can even save a selection of templates from more than one original file.

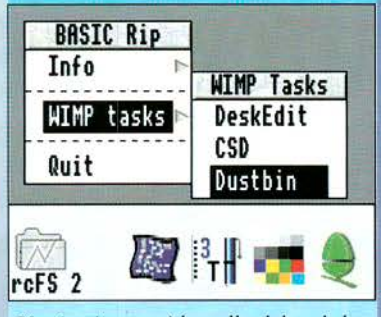
Desktop C

This program accompanies the Desktop C article (page 48), and demonstrates how files can be loaded, saved and moved between applications using the Wimp's data transfer protocol.

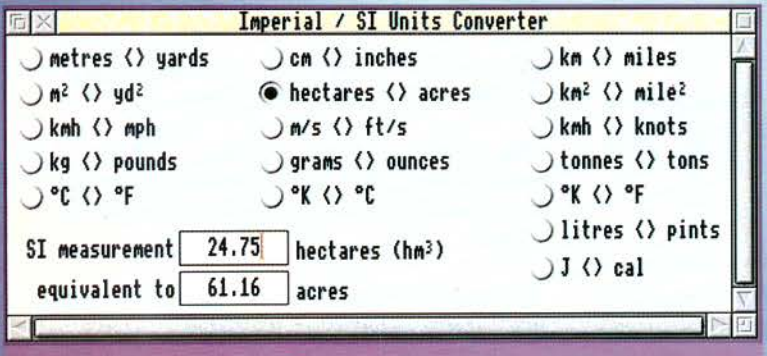
ArcScan Data

ArcScan Indexes for this month's RISC User.

Basic Ripper



You've just accidentally deleted the !RunImage file from your latest masterpiece and are just starting to tear out your hair ... but wait a minute, the application is still installed on the icon bar - surely there must be a way to get at the program in memory and save it? *Basic Ripper* rides to the rescue! Once installed, it will search through the workspace of any application currently running, looking for a Basic program. When this has been found, you can save it back to disc and breathe a huge sigh of relief!



MetriConvert

Holiday time is here again - sun, sea, scenery ... and lots of friendly natives who've never heard of ounces or pints (or for our overseas readers visiting Britain, lots of natives who've never heard of anything else). What you need is a program to convert between imperial and SI units. *MetriConvert* handles 17 different types of conversion, from miles-kilometres to calories-Joules. So now you can enter the Bierkeller with confidence and order your usual 0.57 litres of bitter...

The BJC-600 and Turbo

The new BJC-600 A4 plain paper printer from Canon, combined with Computer Concepts' 24-bit TurboDriver software, provides a key component in the full colour revolution that is occurring in the Acorn world.

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- Separate ink cartridges for each of the colours - saves ink and money. It's even possible to change the ink cartridge part way through a page being printed.
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